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The effects of moral disengagement and avatar identification on player experience of guilt

by

Johnie J. Allen

A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Psychology

Program of Study Committee:
Craig A. Anderson, Major Professor
Douglas Gentile
Nathaniel Wade

Iowa State University

Ames, Iowa

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ABSTRACT

The study of video games and morality has emerged only recently. Thus far, research has examined the topic through the lens of moral foundations theory and moral disengagement theory. Generally, these lines of research have found that players often treat in-game behavior as morally significant as long as the behavior is considered morally relevant and the player is not morally disengaged. Another nascent domain of research concerns video games and identification with in-game avatars. This area has found that video games can temporarily alter implicit and explicit self-concepts to be more similar to the characters or roles that are played in video games. Moreover, this self-other merging may have important implications for real-world behaviors. The present study synthesized these three lines of research by utilizing a 2 (moral disengagement: unjustified violence/justified violence) x 2 (avatar identification: low/high) design with explicit and implicit guilt as the primary outcome variables.

It was predicted that player experience of guilt would be stronger when participants carried out unjustified (as compared to justified) violence (H1), and this effect would be especially pronounced in the high identification condition (H2). Moreover, it was predicted that this effect would only occur for players who consider the in-game behavior to be morally relevant (H3). Finally, it was expected that player experience of guilt would yield short-term increases in the salience of violated moral foundations. When a continuous measure of similarity identification was used instead of the experimentally manipulated avatar identification factor, results supported H2 for explicit guilt. Participants who carried out unjustified violence were more likely to experience guilt if they felt similar to their in-game avatars, but feeling similar to one's avatar had no effect on the likelihood of experiencing guilt for players who carried out

justified violence. Familiarity with the game that was played also reduced the likelihood of experiencing guilt. These effects were not found for implicit guilt. No other hypotheses were supported.

CHAPTER 1. INTRODUCTION

Video games have become immensely popular but the full extent of their impact on society remains a mystery. Some important questions have been answered. For example, much of previous research concerning video games has focused on one controversial question: Do violent video games increase aggression? Recent meta-analyses (Anderson et al., 2010; Greitemeyer & Mügge, 2014) provide some of the most compelling evidence to answer this question, and the answer appears to be a resounding yes. Specifically, Anderson et al. (2010) found that violent video game play was linked to increased aggressive behavior, aggressive affect, and aggressive cognition, as well as decreased empathy and prosocial behavior. Moreover, these results were consistent for experimental, correlational, and longitudinal studies in both Eastern and Western cultures.

Video game effects are not always negative, though. Greitemeyer and Mügge (2014) conducted a more recent meta-analysis that replicated many of the findings of Anderson et al. (2010), but also examined the effects of prosocial video games on social outcomes. Results indicated that the effects of prosocial video games were essentially the opposite of violent games. Specifically, prosocial video game play was associated with decreased aggressive behavior, aggressive cognition, and aggressive affect, as well as increased prosocial behavior, prosocial cognition, and prosocial affect. Thus, video games affect players in socially important ways by altering behavior, cognitions, and affect. The direction of these effects, however, depends on the game content, meaning that games can be both "good" and "evil." This "double-edged sword" quality of video games makes understanding their effects all the more important—especially given their staggering popularity.

A recent trend in video game research has shifted from the video game violence debate to the relatively unexplored domain of video games and morality. Thus far, research in this area can be roughly divided into two categories. One line of research has examined video games and morality through the lens of moral foundations theory (Dogruel, Joeckel, & Bowman, 2013; Grizzard, Tamborini, Lewis, Wang, & Prabhu, 2014; Joeckel, Bowman, & Dogruel, 2012, 2013; Weaver & Lewis, 2012), while another line of research has examined video games and morality through the lens of moral disengagement theory (Bowman, Schultheiss, & Schumann, 2012; Gabbiadini, Andrighetto, & Volpato, 2012; Gabbiadini, Riva, Andrighetto, Volpato, & Bushman, 2014; Gollwitzer & Melzer, 2012; Hartmann, Toz, & Brandon, 2010; Hartmann & Vorderer, 2010; Klimmt, Schmid, Nosper, Hartmann, & Vorderer, 2006; Lin, 2011; Shafer, 2012). A separate domain of research has recently developed to examine the effects of avatar[1] identification in video games (Bluemke, Friedrich, & Zumbach, 2010; Fischer et al., 2009; Fischer, Kastenmüller, & Greitemeyer, 2010; Klimmt, Dorothée, & Peter, 2009; Klimmt, Hefner, Vorderer, Roth, & Blake, 2010; Konijn, Bijvank, & Bushman, 2007; Lewis, Weber, & Bowman, 2008; Uhlmann & Swanson, 2004). The present study synthesized these three lines of research by examining the effect of avatar identification and opponent type on player experience of guilt.

[1] Although the terms avatar and character are often used interchangeably, the word avatar will be used throughout because it emphasizes the fact that player-controlled video game characters serve as projections of the player.

CHAPTER 2. LITERATURE REVIEW

Video Games and Moral Foundations

Moral Foundations Theory (MFT; Graham et al., 2012) is a pluralistic, dual-process approach to morality rooted in evolutionary theory. MFT proposes that people are evolutionarily prepared to learn certain moral values, norms, and behaviors, creating a "first draft" of morality that is later edited by culture. Those values, norms, and behaviors fall into five distinct moral domains (or foundations). The five foundations described by the most recent account[2] of MFT include the care/harm foundation (concerned with caring and kindness), the fairness/cheating foundation (concerned with fairness, justice, and trustworthiness), the loyalty/betrayal foundation (concerned with loyalty, patriotism, and self-sacrifice), the authority/subversion foundation (concerned with obedience and deference), and the sanctity/degradation foundation (concerned with temperance, chastity, piety, and cleanliness). The pluralistic approach of MFT emphasizes that different people endorse different moral foundations. If an individual strongly endorses a moral foundation, then that foundation is a salient part of that individual's moral system and behaviors related to that foundation will be judged as moral or immoral. If an individual does not endorse a moral foundation, however, then the foundation is not salient and behaviors concerning that foundation are considered morally irrelevant.

According to MFT, moral judgment occurs in two stages: people have an immediate, automatic intuition, or "gut" feeling about the morality of a situation followed by more deliberative moral reasoning (which is often motivated by a desire to support our intuitions).

[2] Previous versions of MFT used the labels harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity.

Each moral foundation is associated with different emotional reactions to morally relevant situations. For example, the care/harm foundation is associated with compassion for victims and anger at perpetrators whereas the fairness/cheating foundation is associated with anger, gratitude, and guilt.

Research utilizing MFT to understand video games and morality has found that most video game players treat morally relevant in-game decisions as they would real-life moral decisions. Weaver and Lewis (2012) found that participants' endorsement of the care/harm and authority/subversion foundations significantly predicted in-game decisions relevant to each domain (i.e., greater endorsement led to fewer moral violations). Moreover, the majority of participants (68%) said that they made the same decision that they would in real-life.

Other experiments have shown that, in most cases, players are less likely to violate[3] a highly salient moral foundation in-game. This pattern has been found for elderly American and German participants (Dogruel et al., 2013; Joeckel et al., 2012), and adolescent German, but not American participants (Joeckel et al., 2012, 2013). When a moral foundation is not salient, most players are equally likely to uphold or violate that moral foundation in-game. This pattern has been found for elderly American, but not German participants (Joeckel et al., 2012), as well as American and German adolescents (Joeckel et al., 2012, 2013). Although further research is needed to explain why the effects did not emerge for all combinations of age group and culture, taken together, these findings suggest that in-game behaviors are considered morally significant if they are relevant to a salient moral foundation. If in-game

[3] In the studies discussed in this paragraph, it is important to note that participants chose to either encourage or discourage a computer-controlled character to violate moral foundations rather than upholding or violating foundations with their own avatars. It is possible that the observed patterns would be even more pronounced if participants were upholding or violating foundations themselves.

behavior is relevant to a non-salient moral foundation, the behavior is considered morally insignificant.

MFT has also been expanded upon to explain the relation between moral foundations and media appeal. Tamborini's model of intuitive morality and exemplars (MIME; Tamborini, 2011; Tamborini et al., 2013) proposes that people are drawn to media that satisfactorily exemplify their salient moral foundations. The model also suggests, however, that the salience of moral foundations can be altered by media exposure. In line with this suggestion, the most recent research concerning video games and MFT found that violating the care/harm and fairness/cheating domains (via unjustified video game violence) increased the salience of these domains, and this effect was mediated by guilt (Grizzard et al., 2014). This finding suggests that virtual violations of moral foundations may morally sensitize players (at least temporarily). Following the MIME, repeated exposure to games that emphasize a particular moral foundation may also increase the salience of that foundation for players over time.

Video Games and Moral Disengagement

Moral disengagement theory (Bandura, 1999, 2002) posits that there are a variety of strategies that people may adopt to reduce the moral significance of immoral behavior. In total, eight strategies of moral disengagement are proposed. Three strategies focus on cognitively reframing reprehensible conduct as acceptable. *Moral justification* occurs when individuals justify immoral behavior by claiming that it is in the service of some greater societal or moral good (e.g., killing in the name of God). *Euphemistic language* allows immoral conduct to be sanitized through word choice (e.g., "neutralizing targets" instead of "killing people"). *Advantageous comparison* occurs when people reframe immoral conduct

as relatively benign compared to other behaviors (e.g., “I may be a thief, but I’m no killer”). Two strategies focus on reducing individual responsibility for immoral behavior. Responsibility can be *displaced* as occurs when followers place moral blame on leaders (e.g., “I was just following orders”), or when leaders remain intentionally ignorant of the immoral conduct of their followers (e.g., maintaining plausible deniability). Responsibility can also be *diffused*, as occurs when tasks are subdivided, group decisions are made, or collective action is taken. Another strategy allows individuals to psychologically distance themselves from the harm they have caused by *ignoring or distorting the consequences* of their behavior. Finally, two strategies focus on altering perceptions of the victims of immoral behavior, making it easier to treat them cruelly. *Dehumanization* strips victims of their human qualities, or even worse, bestows them with bestial or demonic qualities. *Attribution of blame* can also be shifted so that situations or victims are held responsible for immoral behavior.

Video game research has also revealed two game-level strategies of moral disengagement (Klimmt et al., 2006). Players can morally disengage by reminding themselves that what they are playing is just a game (and thus morally irrelevant) or by justifying their immoral behaviors as byproducts of competition (e.g., killing to win). Within Bandura’s moral disengagement framework, the former strategy is a form of ignoring or distorting consequences (e.g., “it’s just a game and it isn’t real, so no real harm is done”) and the latter strategy includes elements of both displacement of responsibility (e.g., “it is ‘kill or be killed’ in this game and I am just following the rules”) and attribution of blame (e.g., “my opponent chose to compete knowing the consequences”). The use of any of the above strategies (alone or combined) can lead to moral disengagement and allow one to evade the negative emotional consequences of immoral behavior.

A small number of studies have examined the relation between video games and moral disengagement (although not always explicitly). Similar to moral foundations research, some studies have shown that moral disengagement within a video game context is associated with immoral or antisocial behavior in video games. Shafer (2012) found that 82.9% of morally activated players (i.e., players who did not utilize any moral disengagement strategies) chose prototypically "good" decisions over prototypically "evil" decisions in-game. In contrast, 64.3% of morally disengaged players (i.e., those who used at least one moral disengagement strategy) chose "evil" over "good" decisions. Another study found that massively multiplayer online role-playing game (MMORPG) players who felt less responsible for their in-game character had greater antisocial gaming motivations (i.e., they were more interested in playing to anger or upset other players; Bowman et al., 2012). It is important to note, however, that there is no clear causal direction for either of these studies.

Other studies have provided support for the notion that in-game behaviors can be morally significant. Hartmann and Vorderer (2010) found that players who engaged in unjustified virtual violence (as compared to justified virtual violence) felt guiltier and experienced greater overall negative affect, but this effect was attenuated by the extent to which participants believed it was "just a game," supporting the game-level mechanism of moral disengagement. Hartmann et al. (2010) found a similar relation between unjustified virtual violence and guilt, with empathetic players exhibiting especially strong guilt responses.

The current findings concerning dehumanization are mixed. Hartmann and Vorderer (2010) found no significant effect of opponent type (human vs. inhuman) on player experience of guilt, but this may have been due to the attenuating effect of participants'

familiarity with the selected game (those who were more familiar experienced less guilt, suggesting a possible game-level moral disengagement mechanism). In contrast, Hartmann et al. (2010) found that players who were provided humanizing information about in-game assassination targets felt guiltier after assassination than players who received no humanizing information. Similarly, Lin (2011) found that players who aggressed against human opponents felt guiltier than players who aggressed against inhuman zombies. Finally, Gollwitzer and Melzer (2012) found that inexperienced video game players who played a violent video game (as compared to a nonviolent game) felt more morally distressed and selected more hygiene products to take home (suggestive of moral cleansing as a result of guilt). Experienced players felt equally morally distressed and selected equivalent numbers of hygiene products in violent and nonviolent game conditions. This suggests that experienced gamers may be more adept at moral disengagement while gaming.

A final set of studies suggests that immoral behavior in video games may increase the general tendency to morally disengage and influence real-world immoral behavior. Gabbiadini et al. (2012) found that for adolescent participants, recency of exposure to a specific violent video game (*Grand Theft Auto*) predicted a greater readiness to resort to moral justification, advantageous comparison, diffusion of responsibility, and distorting consequences for justifying immoral conduct. Frequency of exposure only predicted a greater readiness to use advantageous comparison and neither recency nor frequency predicted the use of dehumanization. Building off of this finding, Gabbiadini et al. (2014) experimentally linked violent video game play to the subsequent real-world immoral behavior of adolescents. Specifically, playing an antisocial violent video game (relative to a nonviolent video game) decreased self-control, increased cheating, and increased aggressive behavior.

This effect was especially pronounced for participants who scored highly on a general measure of moral disengagement.

Altogether, this line of research suggests that in-game behavior is considered morally significant unless a player is morally disengaged. Moreover, immoral behavior in video games (especially violent video games) appears to be linked to general willingness to morally disengage which may in turn influence real-world immoral behavior.

Video Games and Avatar Identification

Recently, a new domain of research has emerged to explore the possible effects of identification with video game avatars. Though not yet as well-established as moral foundations theory or moral disengagement theory, Klimmt et al. (2009) have offered a theoretical account of identification with video game avatars. They propose that avatar identification is a temporary alteration in a player's self-concept that merges characteristics of the avatar with concepts of the self. Additionally, if a video game allows players to reduce the discrepancy between their actual and idealized selves through identification, then that game should be especially enjoyable.

Research thus far has supported Klimmt et al.'s (2009) theory of self-other merging. For example, Uhlmann and Swanson (2004) found that after playing a violent video game (as compared to a nonviolent video game), participants were more likely to implicitly associate themselves with aggressive concepts. Similarly, Bluemke et al. (2010) found that playing a violent game (as compared to a peaceful game) increased participants' implicitly measured aggressive self-concepts. For males, playing a peaceful game also reduced aggressive self-concepts more than playing an abstract game or simply reading. In both of the above studies, playing a violent compared to a nonviolent game had no effect on self-reported trait

aggressiveness, suggesting that explicit self-concept had not changed (at least not drastically). Klimmt et al. (2010) found further support for the divide between implicit and explicit self-associations. Participants randomly assigned to play a racing game had a significantly different pattern of implicit self-associations than participants assigned to play a military game. Those who played the racing game implicitly associated themselves with racing concepts and those who played the military game implicitly associated themselves with military concepts. Implicit self-associations were only weakly associated with explicit identification, however (*r*s < .12).

Other research has suggested that the self-other merging process of avatar identification may have important behavioral implications. In four experimental studies, Fischer et al. (2009) found that participants who played risk-rewarding street-racing games (as compared to non-risk-rewarding racing games and non-racing neutral games) explicitly perceived themselves as more reckless drivers and were more likely to take risks in simulated traffic situations. This effect disappeared when participants merely observed another participant playing the risk-rewarding street-racing game, suggesting that it is important for an individual to be in control of the play experience for effects to occur. Another study by Fischer et al. (2010) found that participants who played an aggressive game with a personalized avatar (i.e., an avatar made to look like the participant) behaved more aggressively than participants who played the same game with a default avatar, and participants in both of these conditions behaved more aggressively than those who played a nonaggressive game with either a personalized or default avatar. Similarly, Konijn, Bijvank, and Bushman (2007) found that participants who played a violent game and wishfully identified with the game protagonist (i.e., wanted to be more like that character) behaved

more aggressively than participants who played the same game but did not wishfully identify. Participants who played the violent game also behaved more aggressively than those who played a nonviolent game.

Overall, recent research on video games and avatar identification suggests that video games can alter our implicit and explicit self-concepts (at least in the short term) and may also have important behavioral implications. The recent research concerning both risky driving and aggression suggests that avatar identification may augment the effects of video games. In other words, if video games act as a double-edged sword with positive and negative effects depending on content, then the emerging picture is that avatar identification acts as a sharpening stone for that sword by strengthening content effects.

The Present Research

The present study synthesized the three lines of research discussed above using a 2 (moral disengagement: unjustified violence/justified violence) x 2 (avatar identification: low/high) experimental design with explicit and implicit guilt as the primary dependent variables. Participants played a video game as an avatar that they should or should not identify with and were provided with moral engagement cues (i.e., fighting against humanized opponents for unjust reasons) or moral disengagement cues (i.e., fighting against dehumanized opponents for just reasons) to create conditions of unjustified and justified violence (respectively). Based upon moral disengagement theory and the findings of Hartmann et al. (2010) and Lin (2011), I predicted that players in the unjustified violence condition would feel guiltier than those in the justified violence condition (H1) because fighting against dehumanized opponents for a just cause should be sufficient to elicit moral disengagement whereas fighting against humanized opponents for an unjust cause should at

least discourage moral disengagement and at most encourage moral engagement. Based upon identification research in general, and the suggested augmentation effect found by Fischer et al. (2009, 2010) and Konijn et al. (2007) specifically, I predicted an interaction such that guilt would be highest for players in the high identification condition who engaged in unjustified violence (H2). Based upon moral foundations theory, I predicted that the expected effects would only occur for participants who endorse the care/harm and fairness/cheating foundations (H3). If the player does not believe that others should be protected from harm and treated fairly, then aggressing against opponents should not be considered morally significant and should not lead to guilt. Finally, based upon the findings of Grizzard et al. (2014), I predicted that player experience of guilt would lead to short-term changes in the salience of violated moral foundations (i.e., the care/harm and fairness/cheating foundations; H4).

CHAPTER 3. METHOD

Design

A 2 (moral disengagement: unjustified violence/justified violence) x 2 (avatar identification: low/high) between-participants design was utilized with explicit and implicit guilt as the primary dependent variables and sacredness of the care/harm and fairness/cheating moral foundations as secondary dependent variables. Participants were blocked by sex and randomly assigned to one of the four conditions so that each condition would be represented equally for males and females.

A subset of the sample (25.40%) also completed a measure of care/harm and fairness/cheating moral foundation salience outside of the lab experiment during a mass testing or scale validation session.[4] The influence of out-of-lab moral foundation salience on experimental outcomes was assessed by including the salience of relevant moral foundations as covariates in the relevant analyses. If these measures emerge as significant covariates then there is evidence that the player's sense of morality does influence his or her experience of guilt.

Participants

IRB approval was obtained before recruiting participants (see Appendix A). The initial sample consisted of 417 undergraduates at a large Midwestern university who participated in exchange for course credit. All participants were told that the experiment

[4] Although the original intention was to require all participants to have completed these measures outside of the lab before participating in the experiment, this requirement severely limited rates of participation and was thus removed. It was expected that most participants would end up completing the measures during a mass testing or scale validation session even without the requirement, but unfortunately this expectation was not met. Thus, the sample size for analyses utilizing the out-of-lab measures of morality were greatly reduced. Although this is an obviously undesirable situation, it was decided that reducing the sample size for one of the four hypotheses was a better choice than reducing the sample size for *all* hypotheses by limiting participant recruitment.

concerned video games and product desirability in order to mask the true hypotheses (see informed consent form in Appendix B). In total, 39 participants were excluded because they did not experience the intended experimental manipulation, had participated more than once, or had problematically-high levels of suspicion. Thirteen of these participants had video game modifications loaded improperly, meaning they either played as the wrong avatar or fought against the wrong enemies. Most of these occurrences were attributable to a bug in the game that was discovered and dealt with early in the experiment. However, some were due to experimenter errors. Seven participants were excluded because their gameplay recordings revealed that they never fought any enemies (or in one participant's case, fought and killed only one enemy).[5] One participant was removed because they escaped from the intended game area and did not explore the cave or fight the intended enemies. One participant was excluded due to a procedural error (i.e., the experimenter gave them the wrong description of in-game goals), two were excluded for not following instructions (e.g., completing the survey before gameplay), and one was excluded because he reported to the experimenter that he had participated in the experiment before. Examination of student ID numbers (used to match in-the-lab data to out-of-the-lab data for some participants) revealed five additional instances of repeat participation (these participants did not let experimenters know that they had previously participated). For each of these cases, the data from the repeat participation were excluded, reducing the sample by five. Finally, nine participants were excluded for high levels of suspicion regarding experimental hypotheses (three guessed or knew the true

[5] Interestingly, none of these seven participants were in the justified violence + low identification condition. All other conditions were roughly equally represented though: two were in the unjustified violence + high identification condition, two were in the justified violence + high identification condition, and three were in the unjustified violence + low identification condition. All seven participants were female.

purpose of the study and six had a specific suspicion that was likely to affect the results).[6] After these exclusions, 378 participants remained: 263 males (69.6%) and 115 females (30.4%). The average age was 19.49 years old (*SD* = 1.55), ranging from 18 to 33.[7] There were 86 participants in the unjustified violence + low identification condition (22.8%), 98 participants in the unjustified violence + high identification condition (25.9%), 95 participants in the justified violence + low identification condition (25.1%), and 99 participants in the justified violence + high identification condition (26.2%).

A subsample of 96 participants completed measures of moral foundation salience outside of the lab. There were 61 males (63.5%) and 35 females (36.5%) with an average age of 19.34 years (*SD* = 1.51), ranging from 18 to 28 years old. There were 16 participants in the unjustified violence + low identification condition (16.7%), 30 participants in the unjustified violence + high identification condition (31.3%), 22 participants in the justified violence + low identification condition (22.9%), and 28 participants in the justified violence + high identification condition (29.2%).

Materials and Measures

Moral Foundations Salience

The moral profile of those who completed measures outside of the lab was assessed with the 30-item Moral Foundations Questionnaire (MFQ30; Graham et al., 2011). Obtaining this measure outside of the lab helped maintain the cover story and provided a "baseline" measure of moral foundations (i.e., a measure unaffected by experimental manipulations).

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[6] Seven of these nine participants were in one of the two unjustified violence conditions (four in the high identification condition and three in the low identification condition). The remaining two participants were in the justified violence conditions (one in the high identification condition and one in the low identification condition).

[7] One participant reported being 2 years old. This obviously erroneous value was deleted and replaced with the mean age for all other participants.

Obtaining a measure outside of the lab context was preferable because previous research has suggested that the salience of moral foundations may temporarily change after in-game moral violations (Grizzard et al., 2014).

The MFQ30 measures the degree to which individuals endorse five distinct moral domains: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation. Higher scores indicate greater endorsement or foundation salience. The first portion of the questionnaire asks participants how relevant different considerations are to their decisions of whether something is right or wrong (0 = *not at all relevant*, 5 = *extremely relevant*). Three considerations are offered for each domain. Examples include: Whether or not… "someone suffered emotionally" (care/harm), "some people were treated differently than others" (fairness/cheating), "someone's action showed love for his or her country" (loyalty/betrayal), "someone showed a lack of respect for authority" (authority/subversion), and "someone violated standards of purity and decency" (sanctity/degradation). This portion also includes a "catch" item designed to filter out inattentive participants ("Whether or not someone was good at math").

The second portion of the MFQ30 asks participants the extent to which they agree (1 = *strongly disagree*, 5 = *strongly agree*) with 15 domain-relevant statements (three per domain). Example statements include: "Compassion for those who are suffering is the most crucial virtue" (care/harm), "Justice is the most important requirement for a society" (fairness/cheating), "I am proud of my country's history" (loyalty/betrayal), "Respect for authority is something all children need to learn" (authority/subversion), and "Chastity is an important and valuable virtue" (sanctity/degradation). This portion includes an additional "catch" item to filter inattentive participants ("It is better to do good than to do bad"). Scores

on the six relevant items for each foundation (from both portions of the MFQ) are averaged to serve as the measure of moral foundation salience. Higher scores indicate greater salience or endorsement of that foundation. In the current study, the subscales had the following internal consistencies (as measured by α): care/harm = .57, fairness/cheating = .61, loyalty/betrayal = .64, authority/subversion = .61, and sanctity/degradation = .72. Although these values are low, it is unfortunately common for measures of moral foundations to have reliabilities in this range (see, for example: Graham et al., 2011; Graham & Haidt, 2012; Grizzard et al., 2014; Tamborini et al., 2013). Descriptive statistics for this measure (and all other measures of interest) are provided in Appendix C.

Video Game

Participants played a modified version of *The Elder Scrolls V: Skyrim*, a popular fantasy action role-playing game (Bethesda Game Studios, 2011). *Skyrim* gives players the ability to extensively customize their avatar, choosing from 10 fictional humanoid races ranging in appearance from prototypically-human representations to fantastical avatars with elven[8], orcish[9], reptilian, or feline appearances. After selecting avatar race, players can further customize by changing sex, skin tone, weight, facial structure (e.g., eyes, ears, and nose), skin tone, hair, facial hair, hair color, complexion, and battle scars/tattoos. The avatar creation system also includes several predesigned avatars for each race that vary along the dimensions mentioned above. Finally, players can choose a name for their avatar.

In the high identification condition, participants were asked to create an avatar that they could identify with[10] and were allowed to choose any name they liked for their avatar.

[8] Elven characters have a slender build with pointed ears and light or dark skin.
[9] Orcish characters have a muscular build with tusks and green or black skin.
[10] The nascent literature concerning avatar identification has not yet determined whether identification effects occur primarily as a result of avatars embodying a player's ideal self, as a result of high similarity between the

Players in the low identification condition were also asked to design an avatar they identified with but were required to name the character "Placeholder" and were not allowed to play as that avatar. Instead, they were "randomly" assigned to play as an opposite-sex version of the default, predesigned avatar of the reptilian race. This avatar was named "Placeholder019" or "Placeholder020" depending in its sex. Participants in this condition were led to believe that the character they were designing would be saved so that future participants could be randomly assigned to play as that character. They also believed that the character they had been "randomly" assigned to was designed by another participant.

Players in all conditions were asked to explore a cave full of hostile enemies in search of treasure. In the unjustified violence condition (designed to promote moral engagement), players encountered human enemies and were given the following description:

> "A nearby cave is thought to contain valuable treasure. Unfortunately, there is more than treasure in the cave. A group of innocent townspeople have settled in the cave after their town was destroyed in the war. They will not take kindly to outsiders exploring their home. Your goal is to search the cave and take whatever treasure you can find."

In order to further humanize the opponents in this condition, each enemy had a unique name appropriate to the fantasy setting (e.g., Skulic, Jolf, or Celia). In the justified violence condition (designed to promote moral disengagement), players battled against humanoid undead creatures and were given the following description:

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avatar and the player's actual self, or as a result of both to varying degrees. Given this uncertainty and the fantastical nature of the selected game, I decided to simply ask participants to design an avatar that they could identify with so that players felt free to choose fantasy races as well as prototypically human races. In order to avoid confounding the uncustomized, low identification condition with actual avatar-player similarity I decided to have participants play as an opposite-sex avatar of the reptilian race in the low identification condition instead of a prototypically human race.

> "A nearby cave is thought to contain valuable treasure. Unfortunately, there is more than treasure in the cave. A group of unholy undead creatures have recently overrun the cave. They will not take kindly to outsiders exploring their home. Your goal is to search the cave and take whatever treasure you can find."

Enemies in this condition had generic names appropriate to the fantasy setting (e.g., Draugr or Restless Draugr). The two conditions were designed to have similar levels of difficulty. All players were equipped with a sword and shield and basic armor, but no helmet (so that players could see their avatar's head and face). To ensure that players remained aware of their avatar's appearance, the game was played from the third-person perspective.

Explicit Guilt

Immediately after playing the game, participants completed an adapted version of the Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1999). Participants were asked to rate the extent to which they felt 35 different feelings and emotions during their gameplay, ranging from "*very slightly or not at all* (1)" to "*extremely* (5)." The selected items included an eight-item joviality subscale (e.g., "happy" and "joyful"), a six-item self-assurance subscale (e.g., "proud" and "bold"), a four-item attentiveness subscale (e.g., "alert" and "determined"), a six-item hostility subscale (e.g., "angry" and "hostile"), a five-item sadness subscale (e.g., "sad" and "alone") and a six-item guilt subscale (i.e., "guilty," "ashamed," "blameworthy," "angry at self," "disgusted with self," and "dissatisfied with self"). This final subscale served as the explicit measure of guilt. Item order was randomized and all participants completed the items in the same order. Subscale scores were calculated by averaging the relevant items. The αs for these subscales

were as follows: joviality = .94, self-assurance = .88, attentiveness = .80, hostility = .75, sadness = .77, and guilt = .84.

Video Game Ratings

After completing the PANAS-X, participants rated their game experience on several dimensions using seven-point scales. Three game enjoyment items were adapted from the three-item scale used by Lin (2011), with participants rating the extent to which the game was "*not enjoyable* (1) vs. *enjoyable* (7)," "*not likable* (1) vs. *likable* (7)," and "*not entertaining* (1) vs. *entertaining* (7)." Based upon the Video Game Rating Sheet used by Anderson and Dill (2000), participants also rated how difficult, frustrating, and exciting the game was; how violent the content and graphics of the game were; and how fast the action was. The Video Game Rating Sheet uses seven-point unipolar scales with seven indicating presence of the concept (e.g., "*very violent content*" or "*difficult*") and one indicating absence of the concept (e.g., "*no violent content*" or "*easy*"). Ratings of competitiveness ("*not very competitive*" or "*very competitive*") were also obtained.

Because the four items assessing how enjoyable, likeable, entertaining, and exciting the game was were all highly intercorrelated (*r*s > .72), these items were averaged to create a positive video game experience score ($\alpha = .95$). Ratings of difficulty and frustration were also highly related ($r = .68$), so these two items were averaged to create a negative video game experience score ($\alpha = .81$). Ratings of how violent the content and graphics were correlated strongly as well ($r = .70$) and were averaged to create a video game violence score ($\alpha = .82$). This left five video game rating variables: positive video game experience, negative video game experience, violence, action pace, and competitiveness.

In-Game Need Satisfaction

Next, participants completed a modified[11] version of the Player Experience of Needs Satisfaction (PENS) scale (Ryan, Rigby, & Przybylski, 2006). For the PENS scale, players were asked to consider their game experience and to rate their level of agreement (1 = *do not agree*, 7 = *strongly agree*) with statements designed to assess player experience of competence (e.g., how effective and skillful players felt; three items), autonomy (e.g., how much freedom the game offered; three items), presence/immersion (e.g., how much the player felt like they are actually in the game world; nine items), and intuitive controls (e.g., how easy the game controls were; three items). Items were presented in the same random order to all participants. Subscale scores were created by averaging the relevant items (after reverse coding). The αs were as follows: competence = .85, autonomy = .81, presence/immersion = .85, intuitive controls = .80.

Control Variables and Manipulation Checks

Following the procedure of Hartmann and Vorderer (2010), participants were also asked how familiar they were with *Skyrim* (1 = *not at all*, 7 = *very much*) and the extent to which, during their playtime, they thought "this is just a game" and "this is just an experiment in which I have to follow instructions" (1 = *not at all*, 7 = *very much*). Experimental manipulations were tested by asking the extent to which participants agreed (1 = *strongly disagree*, 7 = *strongly agree*) with the following statements: "I fought against nonhuman creatures rather than against human beings," "I felt that my in-game actions were justified," and "I could identify with my in-game character" (latter question adapted from Fischer et al., 2010).

[11] The relatedness subscale of the PENS Scale was irrelevant to the current study and was not included.

Avatar Identification

To obtain a more detailed measure of avatar identification, participants completed the 17-item avatar identification subscale from the player identification scale developed by Van Looy et al. (2012). The avatar identification subscale provides a measure of three constructs: similarity identification (six items; e.g., “My character is like me in many ways”), wishful identification (five items; e.g., “I would like to be more like my character”), and embodied presence (six items; e.g., “When playing, it feels as if my character’s body becomes my own”). Items were presented in the same random order to all participants. All items were rated using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) so that higher scores indicated greater identification. Subscale scores were created by averaging the relevant items and a composite score was created by averaging all items. The αs were as follows: similarity identification = .90, wishful identification = .87, embodied presence = .91, composite avatar identification = .94.

Cover Story Items

In keeping with the cover story, participants used a seven-point scale to rate how likely (1 = *not at all likely*, 7 = *very likely*) they would be to purchase a game similar to the one they played for $0, $10, $20, $30, $40, $50, $60, $70, $80, $90, $100, $110 and $120.

Implicit Guilt

After the previous scales and the cover story items, implicit guilt was measured using an adaptation of the product desirability paradigm used by Gollwitzer and Melzer (2012). Participants were presented with pictures and labels of five hygiene products (gender-neutral body wash, gender-neutral deodorant/antiperspirant, hand soap, toothbrush, and toothpaste) and five non-hygiene products (mechanical pencil pack, gummy bears, milk chocolate bar,

post-it note set, and tea sampler). Participants were asked to select the five items that were most desirable to them at that moment. The number of hygiene products selected served as the measure of implicit guilt (with greater numbers of selected hygiene products indicating a desire for moral cleansing, suggesting greater implicit guilt).

Moral Foundations Sacredness

Post-play salience of moral foundations was assessed using the 20-item Moral Foundations Sacredness Scale (MFSS; Graham & Haidt, 2012). The MFSS assesses how willing participants are to violate each of the five moral foundations in exchange for money. Participants were asked how much money someone would have to pay them to perform an immoral action relevant to each foundation with a response scale of *$0 (I'd do it for free)*, *$10, $100, $1000, $10000, $100000, a million dollars*, and *never for any amount of money*. Examples include: "Kick a dog in the head, hard" (care/harm), "Sign a secret-but-binding pledge to only hire people of your race in your company" (fairness/cheating), "Renounce your citizenship and become a citizen of another country" (loyalty/betrayal), "Make a disrespectful hand gesture to your boss, teacher, or professor" (authority/subversion), and "Get a blood transfusion of 1 pint of disease-free, compatible blood from a convicted child molester" (sanctity/degradation). Subscale scores were calculated by averaging the relevant items. Higher scores indicate greater foundation salience or sacredness. The αs for these subscales were as follows: care/harm sacredness = .75, fairness/cheating sacredness = .64, authority/subversion sacredness = .75, loyalty/betrayal sacredness = .67, sanctity/degradation sacredness = .53. As with the MFQ, although these internal consistencies are somewhat low, values in this range are unfortunately common with measures of moral foundations (see, for

example: Graham et al., 2011; Graham & Haidt, 2012; Grizzard et al., 2014; Tamborini et al., 2013).

Demographics, Video Game Experience, and Suspicion

Participants were asked to report their sex and age. General video game experience was measured using nine items: "Do you ever play video games?" (*yes* / *no*), "If so, how many hours per week do you play?" (*0-5 hours* / *6-10 hours* / *11-15 hours* / *16-20 hours* / *20+ hours*), "Please indicate how many years you have been playing video games" (*open response*). Participants also answered six additional questions using the "*0-5 hours* / *6-10 hours* / *11-15 hours* / *16-20 hours* / *20+ hours*" response scale to assess weekly playtime during the summer, during the school year, in recent months, during the 11th and 12th grades, during the 9th and 10th grades, and during the 7th and 8th grades. These latter six questions had fairly strong intercorrelations (average r = .61, range = .36-.83) and were averaged to create a video game experience measure (α = .90).

Experience with particular genres of video games was also measured. Participants were asked to rate how often (1 = *never*, 4 = *sometimes*, 7 = *all the time*) they play 11 different genres of video games: shooter, action/adventure, puzzle, strategy, simulation, music & party, single-player role-playing, sports, massively multiplayer online role-playing, real world massive multiplayer, and fighting. Example games for each genre were provided with each question.

During debriefing, experimenters probed participants for suspicion and rated each participant on a scale from one (*no suspicion whatsoever – completely believed cover story*) to six (*highly suspicious – guessed the true purpose of the study*).

Procedure

Before arrival, participants were randomly assigned to experimental condition. Upon arrival, participants signed an informed consent form explaining the experimental procedure and stating that the purpose of the experiment was to explore video game characteristics and product desirability (see Appendix B).

After obtaining informed consent, the experimenter helped the participant start the game and create an avatar. Participants watched a short tutorial video to showcase the avatar customization options and were then given eight minutes (in private) to design a character they could identify with. In the high identification condition, participants were allowed to choose a name for their avatar and played the game as that avatar. In the low identification condition, participants designed a character they could identify with but were then "randomly" reassigned to the default, predesigned opposite-sex avatar of the reptilian race. This avatar was named "Placeholder019" or "Placeholder020" depending on sex.

Next, the experimenter provided the participant with instructions for the game. These instructions provided participants with game controls and a full description of their in-game task based upon moral disengagement condition (see materials section for full description). Participants then played the game for 15 minutes as their avatar. This portion of the gameplay was recorded via screen capture software on the computer. During this time, participants explored a cave full of hostile enemies in search of treasure. In the unjustified violence condition, the cave was filled with uniquely-named human opponents. In the justified violence condition, the cave was filled with generically-named humanoid undead creatures. Difficulty and environmental setting were the same across conditions. In both conditions, player avatars were equipped with a sword and shield to fight enemies.

After 15 minutes of gameplay, participants completed all measures in the form of an online questionnaire in the order described in the materials section. Upon questionnaire completion, participants were checked for suspicion, debriefed, thanked, and dismissed.

CHAPTER 7. RESULTS

Overview

In the following sections I first discuss how the data were prepared for analyses (e.g., dealing with missing data and outliers). Next, I test the successfulness of experimental manipulations and determine whether the video game conditions were experienced similarly for all participants in terms of positive experiences, negative experiences, and ratings of violence, action pace, and competitiveness. Then, I test H1-H3 for explicit guilt using logistic regressions followed by the first three hypotheses for implicit guilt using ANCOVAs. Collectively, these analyses assess whether moral disengagement and avatar identification or the salience of the care/harm and fairness/cheating foundations had any influence on player experience of guilt (explicit or implicit). Finally, I test H4 using correlations and ANCOVAs to determine whether guilt experiences or experimental manipulations had any influence on the sacredness of the care/harm and fairness/cheating foundations.

Data Preparation

Missing data were assessed and dealt with at the scale level where possible. There were small amounts of missing data at both the item level and the scale level. For individual items, data were missing from 2.3% of the sample at most. At the scale level, individual participants were missing 11.8% of responses on a given scale at most (i.e., missing 2/17 items on the avatar identification scale). Because there were so few data missing and the missingness appeared to be randomly distributed, all missing values were filled in using each participant's average response to relevant scale or subscale items. For example, for participants missing one of the six items on the similarity identification subscale, missing

values were filled in with each participant's average response to the other five items. For individual items that were not part of a scale (i.e., ratings of how fast-paced or competitive the video game was) missing responses were filled in with the group mean for the appropriate experimental condition.

Next, univariate and multivariate outliers were assessed using boxplots. All individual difference variables that should have been unaffected by experimental manipulations (e.g., age, video game genre preferences, video game experience) were assessed without splitting by groups. All other variables were split into eight groups based on experimental condition (i.e., unjustified violence/justified violence and low avatar identification/high avatar identification) and sex (i.e., male/female). Sex was included as an additional grouping variable because males and females sometimes differ in their responses to video games. Outliers were assessed and dealt with within each of the eight groups separately. When extreme outliers were revealed by boxplots, a 90% Winsorization was applied to the variable to reduce the influence of the outlier without removing it entirely. To Winsorize, the 5^{th} and 95^{th} percentiles were calculated for the variable with extreme outliers. Next, all values below the 5^{th} percentile were changed to the 5^{th} percentile value and all values above the 95^{th} percentile were changed to the 95^{th} percentile value. This procedure successfully reduced the outliers to non-extremity for most variables. However, because there was a floor effect for the explicit guilt variable (i.e., a severe positive skew) for all eight groups, 90% Winsorization was not sufficient to remedy many values being flagged as extreme outliers. Because of this, the explicit guilt variable was recoded into a dichotomous variable so that 0 reflected "felt no guilt" (the lowest possible score of 1.00) and 1 reflected "felt some guilt" (a score from 1.01-5.00). After this, there were 223 participants (59.0%) who felt no guilt and

155 participants (41.0%) who felt some guilt. There were also a few extremely low outliers remaining for the "fought nonhuman creatures" manipulation check variable (for three males and two females in the justified violence + high identification condition) and a few extremely high outliers remaining for the similarity identification variable (for one female in the unjustified violence + low identification condition and one female in the justified violence + low identification condition). Given the relative unimportance of these two variables, however, these few extreme outliers were left as-is. Multivariate outliers on the primary analysis variables within the eight groups were also assessed with Mahalanobis distance, but this method revealed no multivariate outliers.

Descriptive statistics for all variables of interest are shown in Appendix C and a correlation matrix with all primary analysis variables is shown in Appendix D.

Manipulation Checks

A series of 2 (unjustified violence/justified violence) x 2 (low avatar identification/high avatar identification) x 2 (male/female) ANOVAs were conducted on the manipulation check variables. All statistical assumptions were reasonably met unless otherwise noted. Because cell sizes were unequal, adjusted means (i.e., estimated marginal means) and standard errors are reported.

Fought Against Nonhuman Creatures

A 2 x 2 x 2 ANOVA was run with responses to the question: "I fought against nonhuman creatures rather than against human beings" as the dependent variable. Model residuals revealed four extremely low outliers for males and two extremely low outliers for females in the justified violence + high identification condition, suggesting that these participants perceived the undead creatures to be human beings. Given the fact that the

enemies were designed to be undead versions of humans and the somewhat-confusing wording of the question, it is unclear whether these participants should be included or not. Because of this, the analysis was run with and without these participants. With all participants included, there was a significant main effect of moral disengagement, $F(1, 370) = 298.23$, $p < .001$, partial $\eta^2 = .446$. As expected, participants in the justified violence condition were significantly more likely than those in the unjustified violence condition to report fighting against nonhuman creatures rather than human beings ($M = 6.16$, $SE = .13$ vs. $M = 2.98$, $SE = .13$). Unexpectedly, there was also a marginally significant main effect of avatar identification, $F(1, 370) = 3.23$, $p = .073$, partial $\eta^2 = .009$, such that those in the high identification condition (compared to those in the low identification condition) were also more likely to report having fought against nonhuman creatures rather than human beings ($M = 4.74$, $SE = .13$ vs. $M = 4.41$, $SE = .13$). All other main effects and interactions were non-significant, Fs < 1.88, $p > .171$.

When the six extreme outliers were excluded the significant main effect of moral disengagement remained, $F(1, 364) = 362.85$, $p < .001$, partial $\eta^2 = .499$, with participants in the justified violence condition once against scoring higher than participants in the unjustified violence condition ($M = 6.31$, $SE = .12$ vs. $M = 2.98$, $SE = .12$). Additionally, the main effect of avatar identification became significant, $F(1, 364) = 7.43$, $p = .007$, partial $\eta^2 = .020$, with high identification participants scoring higher than low identification participants ($M = 4.88$, $SE = .12$ vs. $M = 4.41$, $SE = .13$). All other main effects and interactions remained non-significant, Fs < 1.55, ps > .21. Although not expected and dependent upon the inclusion or exclusion of outliers, the small difference between the avatar identification conditions may reflect a form of psychological distancing. Those who

identified more with their avatar may have felt more personally responsible for their avatar and have been more motivated to dehumanize their opponents. However, contrary to this hypothesis, participant's responses to the "fought nonhuman creatures" variable did not correlate significantly with the composite avatar identification measure (r = -.01, p = .873), or with any of the avatar identification subscales (rs ranging from -.04 to .04, ps ranging from .448-.777). As such, it is unclear what is causing this small effect.

Felt That In-Game Actions Were Justified

A 2 x 2 x 2 ANOVA was run with the extent to which participants felt that their in-game actions were justified as the dependent variable. Model residuals revealed four extremely low outliers for males in the justified violence + low identification condition, but the statistical conclusions of this analysis did not change when the outliers were excluded. As such, the outliers were kept in the analysis. Results revealed a significant main effect of moral disengagement, $F(1, 370) = 29.34$, $p < .001$, partial $\eta^2 = .075$, and a significant main effect of sex, $F(1, 370) = 10.02$, $p = .002$, partial $\eta^2 = .026$. As expected, participants who engaged in justified violence felt more justified than participants who engaged in unjustified violence (M = 5.74, SE = .13 vs. M = 4.77, SE = .13). Unexpectedly, males felt more justified than females (M = 5.54, SE = .10 vs. M = 4.97, SE = .15). There were no other significant main effects or interactions, Fs < .54, ps > .464.

Identification with Avatar

A 2 x 2 x 2 ANOVA was run with the single item assessing the extent to which participants could identify with their in-game character as the dependent variable. Results revealed that all three main effects were significant but no interactions were, Fs < .65, ps > .422. As expected, participants in the high identification condition identified more than

participants in the low identification condition (M = 4.15, SE = .14 vs. M = 2.88, SE = .15), $F(1, 370) = 40.07$, $p < .001$, partial $\eta^2 = .098$. Unexpectedly however, participants in the justified violence condition also identified with their avatar more than those in the unjustified violence condition (M = 3.78, SE = .14 vs. M = 3.25, SE = .14), $F(1, 370) = 7.03$, $p = .008$, partial $\eta^2 = .019$. This may have been because participants found it more difficult to identify with avatars carrying out unjustified violence. Also unexpected was the finding that males identified with their avatars more than females (M = 3.88, SE = .11 vs. M = 3.15, SE = .17), $F(1, 370) = 12.98$, $p < .001$, partial $\eta^2 = .034$. This may be attributable to males generally having greater experience with video games than females, meaning they have spent more time connecting with virtual characters.

To assess the effectiveness of the avatar identification more thoroughly using a multiple-item measure, a final 2 x 2 x 2 ANOVA was run with the measure of composite avatar identification as the dependent variable. This analysis revealed significant main effects of avatar identification, $F(1, 370) = 7.028$, $p < .001$, partial $\eta^2 = .047$, and sex, $F(1, 370) = 7.03$, $p = .008$, partial $\eta^2 = .019$. Participants in the high identification condition had greater identification than those in the low identification condition (M = 2.17, SE = .06 vs. M = 1.80, SE = .06) and males identified more than females (M = 2.10, SE = .05 vs. M = 1.87, SE = .07). There were no other significant main effects or interactions, Fs < .36, ps > .549.

Overall, it appears that the moral disengagement (unjustified violence/justified violence) manipulation successfully influenced perceptions of the humanity of opponents and the extent to which participants felt that their in-game actions were justified. The avatar identification manipulation (low identification/high identification) successfully influenced

participant's level of identification with their avatar. It also appears that sex is an important factor to consider in the present analyses.

Game Experience Equivalency

Next, to determine whether participants experienced the game similarly across the four conditions, a series of 2 (unjustified violence/justified violence) x 2 (low identification/high identification) x 2 (male/female) ANCOVAs were conducted with Skyrim familiarity as a covariate and measures of video game experience as dependent variables. For the positive video game experience variable there was a significant three-way interaction, $F(1, 369) = 4.36$, $p = .038$, partial $\eta^2 = .012$. To decompose this effect, simple two-way interactions were examined for each sex separately. This revealed a non-significant two-way interaction for males, $F(1, 369) = 2.29$, $p = .131$, partial $\eta^2 = .006$, and a non-significant two-way interaction for females, $F(1, 369) = 2.16$, $p = .142$, partial $\eta^2 = .006$. The only other significant effect in the model was for Skyrim familiarity, $F(1, 369) = 168.35$, $p < .001$, which was strongly, positively correlated with having had a positive video game experience, $r = .63$, $p < .001$. All other main effects and interactions were non-significant, Fs < 1.50, ps > .222. The adjusted means for males were as follows: unjustified violence + low identification $M = 4.88$, $SE = .17$; unjustified violence + high identification $M = 5.21$, $SE = .16$; justified violence + low identification $M = 4.94$, $SE = .16$; justified violence + high identification $M = 4.80$, $SE = .16$. For females, the adjusted means were: unjustified violence + low identification $M = 5.01$, $SE = .26$; unjustified violence + high identification $M = 4.55$, $SE = .24$; justified violence + low identification $M = 4.57$, $SE = .27$; justified violence + high identification $M = 4.87$, $SE = .24$. These values are plotted in Figure 1.

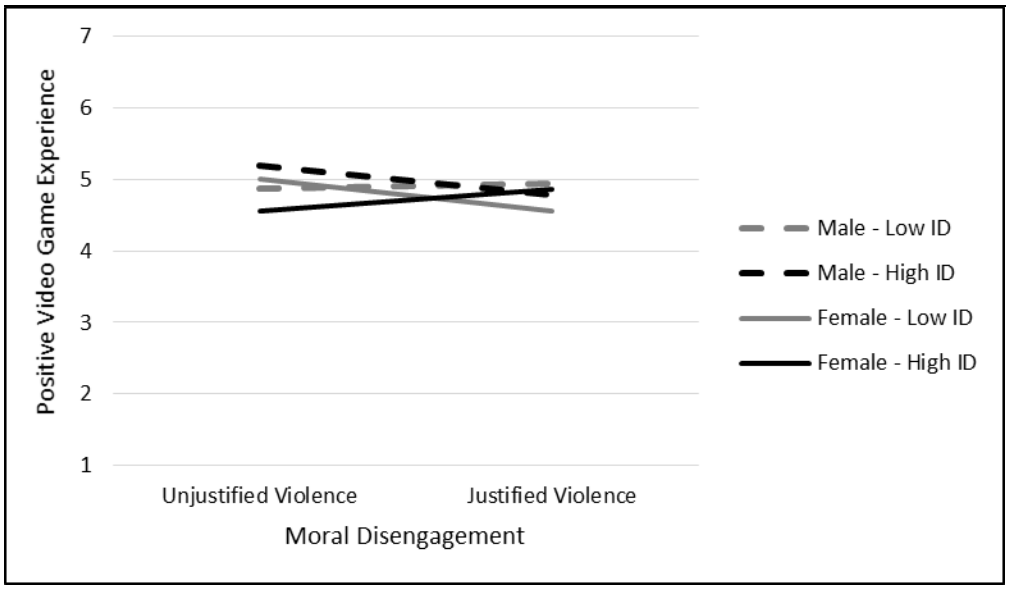

Figure 1. Depiction of the three-way moral disengagement x avatar identification x sex interaction for positive video game experience. ID = Identification.

For the negative video game experience variable, once again, there was a significant three-way interaction, $F(1, 369) = 7.71$, $p = .003$, partial $\eta^2 = .020$.[12] This effect was decomposed by examining simple two-way interactions for males and females. After Bonferroni correction (making the new threshold $p < .025$), the interaction for males was not significant, $F(1, 369) = .26$, $p = .613$, partial $\eta^2 = .001$ but the interaction for females was significant, $F(1, 369) = 8.67$, $p = .003$, partial $\eta^2 = .023$. The plot for these interactions is shown below in Figure 2. Bonferroni-corrected post-hoc comparisons of the cell means for females revealed that the difference between the justified violence + high identification condition and the justified violence + low identification condition was significant, mean difference = 1.28, *SE* = .41, 95% CI: [.17, 2.39], $p = .015$. No other contrasts were significant, *p*s > .318. For females, the adjusted means for the four conditions were as follows: justified violence + low identification $M = 4.80$, $SE = .31$; justified violence + high

[12] There was one extremely high outlier in the residuals but the results did not differ based upon the inclusion or exclusion of this participant. Because of this, results are reported with the outlier included.

identification $M = 3.53$, $SE = .28$; unjustified violence + low identification $M = 3.97$, $SE = .30$; unjustified violence + high identification $M = 4.16$, $SE = .28$. Thus, it seems that for female players, engaging in justified violence as an opposite-sex reptilian avatar was experienced much more negatively than doing the same as a self-designed avatar. Skyrim familiarity was once again a significant covariate, $F(1, 369) = 74.74$, $p < .001$, partial $\eta^2 = .168$, with greater familiarity associated with less negative experiences, $r = -.54$, $p < .001$.

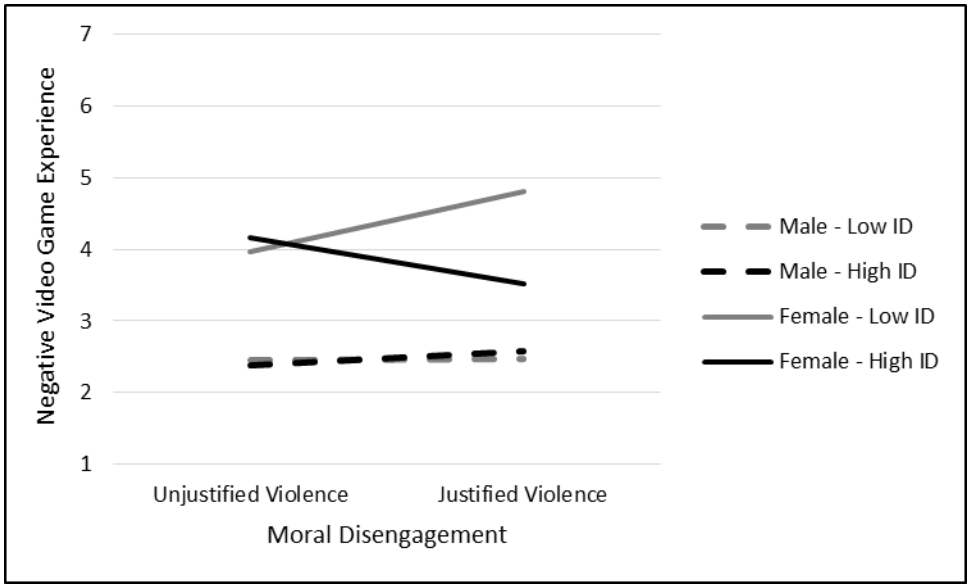

Figure 2. Depiction of the three-way moral disengagement x avatar identification x sex interaction for negative video game experience. ID = Identification.

For ratings of video game violence, there was a significant main effect of moral disengagement, $F(1, 369) = 12.61$, $p < .001$, partial $\eta^2 = .033$. Adjusted means revealed that those who carried out unjustified violence considered the game to be more violent ($M = 4.70$, $SE = .10$) than those who carried out justified violence ($M = 4.20$, $SE = .10$). There were no other significant main effects or interactions, Fs < 2.19, ps > .139. This suggests that the perceptions of video game violence may be partially influenced by the extent to which that violence is justified. Counter to this hypothesis, however, ratings of violence did not correlate significantly with the extent to which participants felt that their in-game actions were

justified. This was true across conditions (r = -.06, p = .248) and within the unjustified violence (r = .04, p = .589) and justified violence (r = -.03, p = .672) conditions. Another possible explanation is the difference in blood visibility between the two conditions. Although both the human and undead opponents bled when attacked, it was generally easier to see the blood from the human opponents than from the undead opponents.

For ratings of how fast-paced the action was, there was a significant avatar identification by sex interaction, $F(1, 369) = 3.93$, p = .048, partial η^2 = .011, and Skyrim familiarity served as a significant covariate, $F(1, 369) = 23.43$, $p < .001$, partial η^2 = .060, with greater familiarity associated with rating the game as more fast-paced, r = .27, $p < .001$. The two-way interaction is plotted in Figure 3. Adjusted means were as follows: male + low identification M = 3.53, SE = .12; male + high identification M = 3.74, SE = .12; female + low identification M = 3.87, SE = .20; female + high identification M = 3.48, SE = .18. All other main effects and interactions were non-significant, Fs < 3.45, ps > .063.

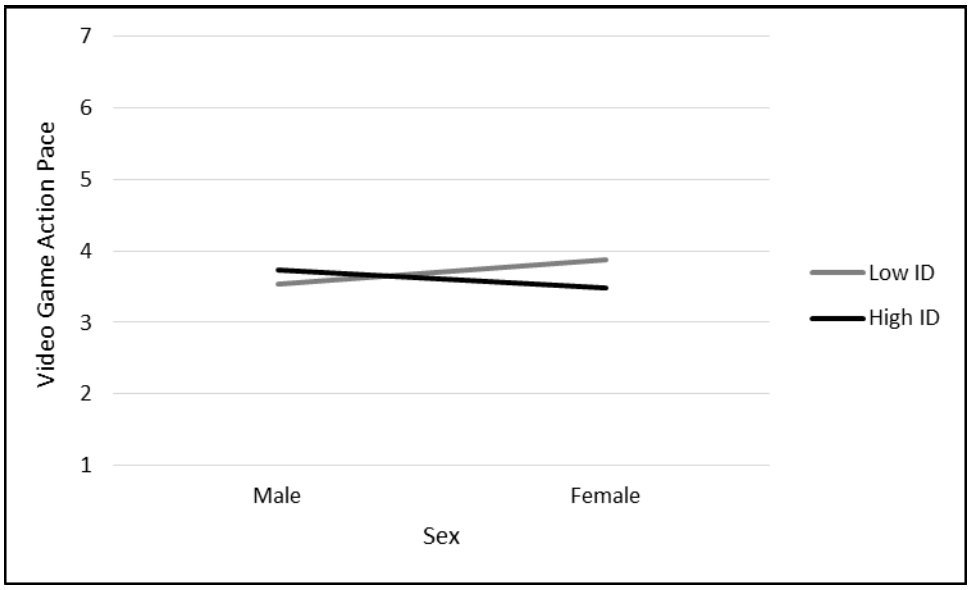

Figure 3. Depiction of two-way avatar identification x sex interaction for video game action pace. ID = identification. Higher action pace ratings indicate a faster pace.

For ratings of competitiveness, the overall model was not significant and was not examined further, $F(8, 369) = 1.20$, $p = .298$, partial $\eta^2 = .025$. This suggests that ratings of competitiveness were similar for both sexes and across the four experimental conditions regardless of familiarity with Skyrim.

Overall, although significant interactions did emerge, the differences between groups were fairly small (with the exception of the negative video game experience variable). Thus, it seems that the conditions were experienced fairly similarly by all participants in terms of positive experiences and perceptions of violence, action pace, and competitiveness.

Hypothesis Testing

Effects of Experimental Manipulations on Explicit Guilt

It was predicted that players who engaged in unjustified violence would feel guiltier than those who engaged in justified violence (a main effect; H1) and that moral disengagement and avatar identification would interact so that guilt would be highest for players who engaged in unjustified violence and were highly identified with their avatar (H2). Although these hypotheses were intended to be tested using a 2 (unjustified violence/justified violence) x 2 (low identification/high identification) ANCOVA, the floor effect that occurred for the explicit guilt variable made it impossible to meet the necessary statistical assumptions (there were far too many values flagged as extremely high outliers). Because of this, the explicit guilt variable was dichotomized so that zero reflected "felt no guilt" (the lowest possible score, 1.00) and one reflected "felt some guilt" (a score between 1.01 and 5.00). After this, binary logistic regression was used instead of ANCOVA.

To determine which covariates to include in the analysis, correlations were calculated between explicit guilt (both the dichotomized and continuous versions) and potential

covariates (demographic variables and theoretically-justified variables). These correlations are shown in Table 1. Variables were considered good covariates if they were significantly related to explicit guilt but not significantly related to experimental manipulations. As shown in Table 1, sex, Skyrim familiarity, the "just a game" variable, and overall video game experience all emerged as good covariates. To identify potential issues with multicollinearity, correlations among these variables were examined. Skyrim familiarity and video game experience were strongly correlated ($r = .56$, $p < .001$). Because Skyrim familiarity had a stronger association with guilt, this variable was selected as a covariate over video game experience.

Table 1.
Correlations between Potential Covariates, Explicit Guilt, Implicit Guilt and Dummy-Coded Factors

	Explicit Guilt (Dichotomized)	Explicit Guilt	Implicit Guilt	Moral Disengagement	Avatar Identification
Sex	.12*	.20**	-.19***	-.02	.02
Age	.04	.05	.05	.06	.03
Skyrim Familiarity	-.36***	-.34***	-.01	-.06	-.01
Thought "This is Just a Game"	.10†	.13*	.05	.06	-.01
Thought "This is Just an Experiment"	.05	.06	.02	.03	-.00
Video Game Experience	-.23***	-.27***	.05	-.07	-.03

Note. $N = 378$. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. Moral Disengagement coded as 0 = unjustified violence, 1 = justified violence; Avatar Identification coded as 0 = low identification, 1 = high identification; Sex coded as 1 = male, 2 = female.
† $p = .05$, * $p < .05$, ** $p < .01$, *** $p < .001$.

A binary logistic regression was run with moral disengagement, avatar identification, and the moral disengagement by avatar identification interaction included as predictors along with sex, Skyrim familiarity, and the "just a game" variable. There was one outlier with a standardized residual greater than 3.00 which was excluded from the analysis. All other statistical assumptions were met. The model was statistically significant, $\chi^2(6) = 63.53$, $p < .001$, explaining 20.9% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 68.4% of cases. The sensitivity was 61.0% and the specificity was 73.5%. That is, of participants who felt some guilt, 61.0% were classified successfully by the model and of participants who felt no guilt, 73.5% were classified correctly by the model. The results for individual predictors are shown in Table 2 and the model-predicted and actual percentages of participants who felt guilt in each condition are shown in Table 3. Contrary to H1, there was no significant main effect of moral disengagement ($p = .171$). There was also no significant moral disengagement by avatar identification interaction ($p = .068$), although this effect approached traditional significance levels. Sex and the extent to which participants thought "this is just a game" to themselves while playing were also non-significant predictors (ps = .146 and .292, respectively). Skyrim familiarity, however, did have a significant effect, with each one unit increase in familiarity associated with a 31% reduction in the odds of feeling any guilt.

Table 2.
Binary Logistic Regression Predicting Likelihood of Feeling Guilt based on Moral Disengagement, Avatar Identification, Moral Disengagement x Avatar Identification, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Moral Disengagement	.45	.33	1.875	1	.171	1.57	[.82, 3.00]
Avatar Identification	.05	.33	.024	1	.876	1.05	[.55, 2.01]
Moral Disengagement x Avatar Identification	-.84	.46	3.329	1	.068	.43	[.18, 1.06]
Sex	-.40	.28	2.117	1	.146	.67	[.39, 1.15]
Skyrim Familiarity	-.37	.06	43.679	1	.000	.69	[.62, .77]
Thought "This is Just a Game"	.06	.06	1.112	1	.292	1.06	[.62, .77]
Constant	.69	.42	2.678	1	.102	1.99	

Note. $N = 377$. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. Moral Disengagement coded as 0 = morally engaged, 1 = morally disengaged; Avatar Identification coded as 0 = low identification, 1 = high identification; Sex coded as 0 = male, 1 = female.

Table 3.
Model-Predicted and Actual Percentages of Participants Feeling Guilt in Each Condition from the Model Shown in Table 2.

	Predicted Percentage [Compared to Actual Percentage] of Participants Feeling Guilt in Each Condition	
	Low Identification	High Identification
Unjustified Violence	45.3% [39.5%]	44.9% [38.8%]
Justified Violence	56.8% [49.5%]	16.3% [35.7%]

Although the expected interaction did not reach conventional levels of statistical significance, it did approach the threshold. Because of this, an exploratory analysis was conducted to examine the interaction in further detail. Specifically, two separate logistic regressions were carried out on participants in the unjustified violence and justified violence conditions. Both logistic regressions included likelihood of feeling guilt as the outcome variable and avatar identification, sex, Skyrim familiarity, and the "just a game" variable as predictors. The results for the predictors of both models are shown in Table 4 and the model-predicted and actual percentages of participants feeling guilt in each condition are shown in

Table 5. For participants who engaged in unjustified violence the model was statistically significant, $\chi^2(4) = 32.04$, $p < .001$, explaining 21.7% of the variance in guilt according to the Nagelkerke *Pseudo-*R^2, and correctly classifying 67.9% of cases. The sensitivity (i.e., the percentage of correct classification of players who felt some guilt) was 52.8%. The specificity (i.e., the percentage of correct classifications of players who felt no guilt) was 77.7%. For these players, avatar identification and sex did not significantly predict the likelihood of feeling guilt (*p*s = .875 and .978, respectively). There were, however, significant effects of Skyrim familiarity ($p < .001$) and the "just a game" variable ($p = .031$). Similar to before, each one unit increase in Skyrim familiarity was associated with a 27% reduction in the odds of feeling guilt. Each one unit increase on the "just a game" variable was associated with a 19% increase in the odds of feeling guilt—that is the more participants thought "this is just a game" to themselves while playing, the more likely they were to feel guilt. This counterintuitive finding may attributable to emotional regulation. Participants who were morally engaged may have attempted to decrease feelings of guilt by reminding themselves that what they are doing is "just a game," and thus, they should not feel bad about it.

Table 4.
Separate Binary Logistic Regressions for Unjustified and Justified Violence Conditions Predicting Likelihood of Feeling Guilt based on Avatar Identification, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Unjustified Violence							
Avatar Identification	.05	.33	.025	1	.875	1.05	[.55, 2.02]
Sex	-.01	.39	.001	1	.978	.99	[.46, 2.13]
Skyrim Familiarity	-.32	.08	17.243	1	.000	.73	[.62, .84]
Thought "This is Just a Game"	.18	.08	4.630	1	.031	1.19	[1.02, 1.40]
Constant	-.07	.54	.019	1	.892	.93	

Table 4 continued

Justified Violence							
Avatar Identification	-.81	.33	6.126	1	.013	.44	[.23, .85]
Sex	-.81	.40	4.207	1	.040	.44	[.20, .97]
Skyrim Familiarity	-.42	.08	27.156	1	.000	.66	[.56, .77]
Thought "This is Just a Game"	-.06	.08	.516	1	.473	.94	[.80, 1.11]
Constant	1.95	.58	11.324	1	.007	7.01	

Note. N = 184 for Unjustified Violence, N = 193 for Justified Violence. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt; Avatar Identification coded as 0 = low identification, 1 = high identification; Sex coded as 0 = male, 1 = female.

Table 5.
Model-Predicted and Actual Percentages of Participants Feeling Guilt in Each Condition from the Separate Models Shown in Table 4.

	Predicted Percentage [Compared to Actual Percentage] of Participants Feeling Guilt in Each Condition	
	Low Identification	High Identification
Unjustified Violence	36.0% [39.5%]	32.7% [38.8%]
Justified Violence	56.8% [49.5%]	26.5% [35.7%]

For participants who engaged in justified violence the model was statistically significant, $\chi^2(4) = 36.97$, $p < .001$, explaining 23.4% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 73.1% of cases. The sensitivity (i.e., the percentage of correct classification of players who experience some guilt) was 67.1%, and the specificity (i.e., the percentage of correct classifications of players who felt no guilt) was 77.5%. For these participants the "just a game" variable was not a significant predictor, but all other variables were (ps < .041). Being in the high identification condition was associated with a 66% reduction in the odds of feeling guilt compared to the low avatar identification condition. Thus, participants who fought against unholy, undead creatures with an avatar of their own design were especially likely to feel no guilt compared to those who did the same as an opposite-sex reptilian avatar. Sex was also a significant predictor with being female associated with a 66% reduction in the odds of feeling guilt as compared to being male.

Finally, Skyrim familiarity was once again a significant predictor, with each one unit increase in familiarity associated with a 34% reduction in the odds of feeling guilt.

To summarize, this set of analyses provided no support for H1, as there was no significant effect of the moral disengagement condition alone. There was partial support for H2 in that there was a marginally significant interaction between moral disengagement and avatar identification, but this interaction was not in the expected direction. Instead of high avatar identification making players feel especially guilty when carrying out unjustified violence, avatar identification had no significant effect for these participants. Instead, high avatar identification seemed to make guilt especially unlikely for participants who were carrying out justified violence. However, given the exploratory nature of decomposing a marginally significant interaction, these results should be interpreted with caution.

Effects of Moral Disengagement and Similarity Identification on Explicit Guilt

To complement the previous analyses, an additional logistic regression was run substituting the experimental avatar identification factor (low identification/high identification) with a continuous measure of avatar identification. Although the avatar identification manipulation did produce significant differences in the composite measure of avatar identification, the differences were fairly small. Because three avatar identification subscales were available (i.e., similarity identification, wishful identification, and embodied presence), independent t-tests were conducted to test how each of the subscales was impacted by the avatar identification manipulation. All three t-tests were significant. Participants in the high identification condition had significantly higher levels of similarity identification (M = 2.15, SD = .90) than did those in the low identification condition (M = 1.64, SD = .73),

$t(368.978^{13}) = 6.09$, $p < .001$, $d = .63$. Participants in the high identification condition also had significantly higher levels of wishful identification ($M = 1.98$, $SD = .87$) than did those in the low identification condition ($M = 1.71$, $SD = .82$), $t(375) = 3.09$, $p = .002$, $d = .32$. Finally, those in the high identification condition also had significantly higher levels of embodied presence ($M = 2.45$, $SD = 1.01$) than did those in the low identification condition ($M = 2.21$, $SD = .97$), $t(375) = 2.36$, $p = .019$, $d = .24$. Thus, participants who played as an avatar that they designed (as compared to an opposite-sex, reptilian avatar), felt more similar to that avatar, wished they were more like that avatar, and felt more like they were present in the body of that avatar as they played. The effect of the manipulation was largest for similarity identification, followed by wishful identification, and then embodied presence.

Because the avatar identification manipulation had the largest effect on similarity identification, this continuous measure (centered at the mean) was used in place of the experimental avatar identification factor in another logistic regression. Likelihood of feeling guilt was predicted by moral disengagement (unjustified violence/justified violence), similarity identification, moral disengagement by similarity identification, sex, Skyrim familiarity, and the extent to which participants thought "this is just a game" to themselves while playing. One extreme outlier with a standardized residual of 3.03 was excluded from the analysis. After this, no standardized residuals greater than |2.50| remained. The resulting model was significant, $\chi^2(6) = 62.51$, $p < .001$, explaining 20.6% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 68.2% of cases. The sensitivity and specificity values showed that 64.3% of the participants that felt guilt were correctly classified and 70.9% of the participants that felt no guilt were correctly classified.

[13] The assumption of homogeneity of variance was violated so the t-test correcting for this was used.

The results for individual predictors are shown in Table 6. The main effect of moral disengagement was non-significant (p = .998). There was a marginally significant effect of similarity identification (p = .063), but this was qualified by a significant moral disengagement by similarity identification interaction (p = .026). Sex and the "just a game" variable were not significant predictors (ps = .133 and .321, respectively), but Skyrim familiarity was (p < .001). Every one unit increase in Skyrim familiarity was associated with a 30% reduction in the odds of experiencing guilt.

Table 6.
Binary Logistic Regression Predicting Likelihood of Feeling Guilt based on Moral Disengagement, Similarity Identification, Moral Disengagement x Similarity Identification, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Moral Disengagement	-.00	.23	.000	1	.998	1.00	[.64, 1.57]
Similarity Identification	.37	.20	3.458	1	.063	1.45	[.98, 2.15]
Moral Disengagement x Similarity Identification	-.60	.27	4.989	1	.026	.55	[.32, .93]
Sex	-.41	.28	2.252	1	.133	.66	[.39, 1.14]
Skyrim Familiarity	-.36	.06	41.132	1	.000	.70	[.63, .78]
Thought "This is Just a Game"	.06	.06	.985	1	.321	1.06	[.95, 1.18]
Constant	.73	.39	3.533	1	.060	2.07	

Note. N = 377. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. Moral Disengagement coded as 0 = unjustified violence, 1 = justified violence; Sex coded as 0 = male, 1 = female. Similarity Identification was centered at the mean.

To make sense of the significant interaction term, logistic regressions were run separately on participants in the unjustified violence condition (N = 184) and participants in the justified violence condition (N = 193). For participants engaging in unjustified violence, the model was significant, $\chi^2(4) = 35.62$, p < .001, explaining 23.9% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 66.3% of cases. The sensitivity and specificity values showed that 51.4% of the participants that felt guilt were correctly classified and 75.9% of the participants that felt no guilt were correctly classified.

Results for individual predictors are shown in Table 7. The effect of similarity identification was marginally significant (p = .061),[14] with each one unit increase in similarity identification associated with a 48% increase in the likelihood of feeling guilt. This provides support for the hypothesized interaction (H2)—participants who engaged in unjustified violence were most likely to feel guilty when they identified highly with their avatar (through perceived similarity). The effect of sex was non-significant (p = .890), but Skyrim familiarity and the "just a game" variable both emerged as significant predictors (ps < .001 and = .030, respectively). Each one unit increase in Skyrim familiarity was associated with a 29% decrease in the odds of feeling guilt. Each one unit increase in the extent to which participants thought "this is just a game" while playing was associated with a 20% increase in the likelihood of feeling guilt.

Table 7.
Separate Binary Logistic Regression for Participants in the Unjustified and Justified Violence Conditions Predicting Likelihood of Feeling Guilt based on Similarity Identification, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Unjustified Violence							
Similarity Identification	.39	.21	3.507	1	.061	1.48	[.98, 2.22]
Sex	-.06	.40	.019	1	.890	.95	[.44, 2.05]
Skyrim Familiarity	-.35	.08	19.053	1	.000	.71	[.60, .83]
Thought "This is Just a Game"	-.18	.08	4.734	1	.030	1.20	[1.02, 1.41]
Constant	.06	.52	.013	1	.909	1.06	

[14] It is important to keep in mind that the sample size has essentially been halved for this test, reducing the power to detect effects in each of the moral disengagement conditions. Thus, I believe it is justified to treat this effect as practically significant (especially given the significant interaction term).

Table 7 continued

Justified Violence							
Similarity Identification	-.27	.19	2.086	1	.149	.76	[.53, 1.10]
Sex	-.79	.39	4.043	1	.044	.46	[.21, .98]
Skyrim Familiarity	-.38	.08	22.421	1	.000	.69	[.59, .80]
Thought "This is Just a Game"	-.07	.08	.682	1	.409	.94	[.80, 1.10]
Constant	1.42	.53	7.222	1	.007	4.14	

Note. N = 184 for Unjustified Violence and N = 193 for Justified Violence. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt; Sex coded as 0 = male, 1 = female. Similarity Identification was centered at the mean.

For participants who engaged in justified violence, the model was significant, $\chi^2(4) = 32.77$, $p < .001$, explaining 21.0% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 69.9% of cases. The sensitivity and specificity values showed that 67.1% of the participants that felt guilt were correctly classified and 72.1% of the participants that felt no guilt were correctly classified. In this model similarity identification was not a significant predictor ($p = .149$), nor was the "just a game" variable ($p = .409$). Sex and Skyrim familiarity were significant predictors, however (ps = .044 and < .001, respectively). Being female (as compared to male) was associated with a 54% decrease in the odds of feeling guilt and each one unit increase in Skyrim familiarity was associated with a 31% decrease in the odds of feeling guilt. The effects of similarity identification on the probability of feeling guilt in the two moral disengagement conditions (controlling for other variables) are shown in Figure 4. Interestingly, although the effect of similarity identification was not significant for participants in the justified violence condition, the effect approached significance and was in the same direction as the significant effect of the avatar identification factor (i.e., low/high) from the prior analysis.

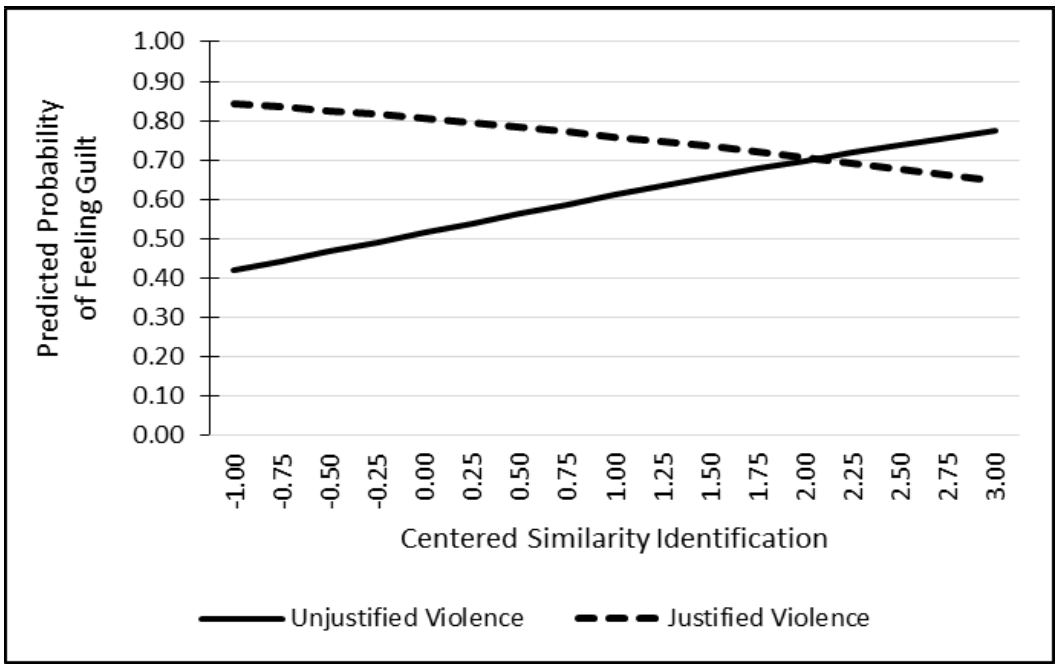

Figure 4. Predicted probability of feeling guilt at different levels of similarity identification for the justified and unjustified violence conditions controlling for sex, Skyrim familiarity, and the extent to which participants thought "this is just a game" to themselves while playing.

Effects of Moral Foundation Salience on Explicit Guilt

It was also predicted that the experimental manipulations would only affect guilt if players endorsed the care/harm and fairness/cheating foundations (H3). This hypothesis would be supported if (1) the salience of these two foundations served as significant predictors when added to the initial model, with higher levels of endorsement increasing the likelihood of experiencing guilt, or (2) foundation salience interacted with experimental conditions, with low salience levels making guilt unlikely regardless of experimental conditions. This hypothesis was tested by re-running the initial logistic regression with care/harm and fairness/cheating foundation salience as additional predictors using only the subsample of 96 participants who completed the measure of moral foundation salience outside of the lab (i.e., the MFQ). The effects of care/harm and fairness/cheating foundation salience were examined separately.

To test for effects of care/harm salience, the initial logistic regression was re-run with care/harm salience as a predictor along with the two-way interactions between care/harm salience and the experimental factors (i.e., moral disengagement and avatar identification). [15] Care/harm salience was centered at the mean. There was one extreme outlier with a standardized residual of 4.39 in the first run and an additional extreme outlier with a standardized residual of 3.58 in the second run. After excluding these two participants there were no standardized residuals greater than |3|. Results revealed that the model was statistically significant, $\chi^2(9) = 40.82$, $p < .001$, explaining 47.4% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 75.5% of cases. Examination of sensitivity and specificity revealed that 71.8% of players who experienced some guilt were correctly classified and 78.2% of players who experienced no guilt were correctly classified. The results for individual predictors are shown in Table 8 and the model-predicted and actual percentages of participants feeling guilt in each condition are shown in Table 9. The effects of moral disengagement, avatar identification, and the moral disengagement by avatar identification interaction were all non-significant (*p*s > .317). Care/harm salience was a marginally significant predictor ($p = .096$) and there was a marginally significant interaction between care/harm salience and moral disengagement ($p = .086$), but no significant interaction between care/harm salience and avatar identification ($p = .688$). Sex and Skyrim familiarity were also significant predictors (*p*s = .034 and .002, respectively) with being female as compared to male increasing the odds of experiencing guilt by 335% and each one-unit increase in Skyrim familiarity decreasing the odds of experiencing guilt by 35%. The

[15] Originally, the three-way interaction was included as well but this was not significant in any model and seemed to cause issues with the odds ratios that were produced (e.g., in some analyses, there were odds ratios as large as 6,758,029 in the upper limit of the 95% CI). It seems likely that the model was simply too complicated for such a small sample (96 participants). The same problem occurred when using the fairness/cheating foundation in subsequent analyses and the same strategy was used.

"just a game" variable was also marginally significant (p = .088), with each one unit increase associated with a 22% decrease in the odds of experiencing guilt. Due to the significantly reduced sample size for this analysis, the marginally significant interaction was not explored further.

Table 8.
Binary Logistic Regression Predicting Likelihood of Feeling Guilt based on Moral Disengagement, Avatar Identification, Care/Harm Foundation Salience, Interactions between Those Variables, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Moral Disengagement	.42	.90	.218	1	.640	1.52	[.26, 8.89]
Avatar Identification	-.89	.89	.997	1	.318	.41	[.07, 2.36]
Care/Harm Salience	-1.43	.86	2.770	1	.096	.24	[.05, 1.29]
Moral Disengagement x Avatar Identification	.46	1.14	.161	1	.688	1.58	[.17, 14.91]
Care/Harm Salience x Moral Disengagement	1.51	.88	2.945	1	.086	4.52	[.81, 25.28]
Care/Harm Salience x Avatar Identification	-.45	.84	.288	1	.592	.64	[.12, 3.31]
Sex	1.47	.69	4.492	1	.034	4.35	[1.12, 16.91]
Skyrim Familiarity	-.43	.14	9.213	1	.002	.65	[.50, .86]
Thought "This is Just a Game"	-.25	.14	2.905	1	.088	.78	[.59, 1.04]
Constant	1.44	1.18	1.486	1	.223	4.24	

Note. N = 94. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. Moral Disengagement coded as 0 = unjustified violence, 1 = justified violence; Avatar Identification coded as 0 = low identification, 1 = high identification; Sex coded as 0 = male, 1 = female. Care/Harm Salience was centered at the mean.

Table 9.
Model-Predicted and Actual Percentages of Participants Feeling Guilt in Each Condition from the Model Shown in Table 8.

	Predicted Percentage [Compared to Actual Percentage] of Participants Feeling Guilt in Each Condition	
	Low Identification	High Identification
Unjustified Violence	37.5% [37.5%]	42.9% [35.7%]
Justified Violence	54.5% [50.0%]	35.7% [42.9%]

Next, the effects of fairness/cheating foundation salience on the likelihood of feeling guilt were examined using the same strategy as before. Moral disengagement, avatar identification, fairness/cheating salience, and all two-way interactions between these variables were entered as predictors along with sex, Skyrim familiarity, and the "just a game" variable. The resulting model was statistically significant, $\chi^2(9) = 30.65$, $p < .001$, explaining 36.7% of the variance in guilt according the Nagelkerke *Pseudo-*R^2, and correctly classifying 75.0% of cases with a sensitivity of 70.7% and a specificity of 78.2%. Results for individual predictors are shown in Table 10 and the model-predicted and actual percentages of participants feeling guilt are shown in Table 11. Fairness/cheating salience did not emerge as a significant predictor alone or in interaction with moral disengagement or avatar identification (*p*s > .217). The only significant predictor was Skyrim familiarity once again ($p = .003$), with every one unit increase in familiarity associated with a 30% reduction in the odds of feeling guilt. Sex also emerged as a marginally significant predictor ($p = .075$), with being female (as compared to male) associated with a 186% increase in the odds of feeling guilt.

Table 10.
Binary Logistic Regression Predicting Likelihood of Feeling Guilt based on Moral Disengagement, Avatar Identification, Fairness/Cheating Foundation Salience, Interactions between Those Variables, Sex, Skyrim Familiarity, and the Extent to Which Participants Thought "This is Just a Game" While Playing.

	B	*SE*	Wald	df	*p*	Odds Ratio	95% CI for Odds Ratio
Moral Disengagement	.39	.83	.225	1	.635	1.48	[.29, 7.53]
Avatar Identification	-.25	.82	.094	1	.759	.78	[.16, 3.85]
Fairness/Cheating Salience	-.98	1.00	.009	1	.325	.37	[.05, 2.65]
Moral Disengagement x Avatar Identification	-.10	1.06	.009	1	.925	.91	[.11, 7.20]
Fairness/Cheating x Moral Disengagement	1.14	.93	1.520	1	.218	3.13	[.51, 19.24]
Fairness/Cheating x Avatar Identification	-.41	.99	.174	1	.677	.66	[.10, 4.60]
Sex	1.05	.59	3.165	1	.075	2.86	[.90, 9.08]
Skyrim Familiarity	-.37	.12	9.134	1	.003	.70	[.55, .88]
Thought "This is Just a Game"	-.12	.13	.841	1	.359	.89	[.69, 1.15]
Constant	.88	1.08	.67	1	.414	2.41	

Note. $N = 96$. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. Moral Disengagement coded as 0 = unjustified violence, 1 = justified violence; Avatar Identification coded as 0 = low identification, 1 = high identification; Sex coded as 0 = male, 1 = female. Fairness/Cheating Salience was centered at the mean.

Table 11.
Model-Predicted and Actual Percentages of Participants Feeling Guilt in Each Condition from the Models Shown in Table 10.

	Predicted Percentage [Compared to Actual Percentage] of Participants Feeling Guilt in Each Condition	
	Low Identification	High Identification
Unjustified Violence	31.3% [37.5%]	40.0% [40.0%]
Justified Violence	59.1% [50.0%]	39.3% [42.9%]

Overall, the predicted effects of care/harm and fairness/cheating foundation salience were not supported. There was no evidence for any effect of fairness/cheating foundation salience and the effects of care/ham foundation salience were only marginally significant. However, given the small sample size ($N = 96$) available to test these hypotheses and the fairly low reliabilities of the moral foundation salience measures, these findings should not

be interpreted as strong evidence against the existence of an effect of moral foundation salience on the experience of guilt.

Effects of Experimental Manipulations on Implicit Guilt

It was predicted that H1 and H2 would be the same for implicit guilt as explicit guilt. Once again, covariates were assessed for inclusion by examining correlations between implicit guilt and potential covariates as well as the correlations between potential covariates and experimental factors (see Table 1). Sex emerged as the only variable that was significantly related to implicit guilt but not significantly related to experimental conditions. Based upon this, a 2 (unjustified violence/justified violence) x 2 (low avatar identification/high avatar identification) ANCOVA was conducted with sex as a covariate and implicit guilt as the dependent variable. Contrary to predictions, there were no significant main effects or interactions: moral disengagement, $F(1, 373) = 1.91$, $p = .168$, partial $\eta^2 = .005$; avatar identification, $F(1, 373) = 1.983$, $p = .160$, partial $\eta^2 = .005$; moral disengagement by avatar identification, $F(1, 373) = 2.250$, $p = .134$, partial $\eta^2 = .006$. However, sex was a significant covariate, $F(1, 373) = 14.03$, $p < .001$, partial $\eta^2 = .036$. Adjusted means were as follows: unjustified violence + low identification $M = 1.84$, $SE = .11$; unjustified violence + high identification $M = 1.83$, $SE = .10$; justified violence + low identification $M = 1.83$, $SE = .11$; justified violence + high identification $M = 2.14$, $SE = .10$. Thus, H1 and H2 were not supported: there was no evidence that the moral disengagement or avatar identification manipulations had any effect on implicit guilt. Participants in all conditions selected equivalent numbers of hygiene products as most desirable to them at that moment.

Effects of Moral Foundation Salience on Implicit Guilt

As with explicit guilt, it was also predicted that the effect of the experimental manipulations on implicit guilt would vary based upon the endorsement of the care/harm and fairness/cheating foundations (H3). To test this, the ANCOVA model was re-run with the addition of care/harm and fairness/cheating foundation salience (in two separate models). For care/harm, the ANCOVA model was customized to include moral disengagement, avatar identification, and care/harm foundation salience along with all two-way and three-way interactions between these variables. Sex was also included in the model. This yielded an overall model that was non-significant, $F(8, 87) = .76$, $p = .638$, partial $\eta^2 = .065$, and was thus not interpreted. To test whether this may have been a consequence of an overcomplicated model, the model was simplified by removing the three-way interaction and sex. The resulting model was also non-significant, $F(6, 89) = .70$, $p = .651$, partial $\eta^2 = .045$. Thus, there was no evidence for any effect of care/harm foundation salience on implicit guilt.

The customized ANCOVA model was re-run with fairness/cheating foundation salience instead of care/harm foundation salience. This model was also non-significant, $F(8, 87) = 1.03$, $p = .419$, partial $\eta^2 = .087$. Reducing the complexity of this model by removing the three-way interaction and sex also produced a non-significant model, $F(6, 89) = .90$, $p = .501$, partial $\eta^2 = .057$. Thus, there was also no evidence for any effect of fairness/cheating foundation salience on implicit guilt; H3 was not supported.

Moral Foundation Sacredness

Finally, it was predicted that player experience of guilt would lead to short-term increases in the salience of violated moral foundations (i.e., the care/harm and fairness/cheating foundations; H4). However, given the tenuous effects of experimental

manipulations on explicit and implicit guilt, treating guilt as a mediator between experimental condition and the sacredness of relevant moral foundations makes little sense. Because of this, the relation between player experience of guilt and moral foundation sacredness was tested using correlations. The hypothesis would be supported by positive correlations (across conditions or within them) between guilt (explicit or implicit) and the sacredness of moral foundations. As shown in Table 12, correlations provided no support for this hypothesis. There was one marginally significant correlation (r = -.19, p = .056) between dichotomized explicit guilt and fairness/cheating foundation sacredness for participants in the unjustified violence + high identification condition, but it was in the opposite direction of what was expected. Having felt some guilt was associated with less sacredness (i.e., being more willing to violate that moral foundation in exchange for money). However, given that the relation was not similar for the continuous variable it seems that little confidence should be placed in this finding. Thus, there was no evidence that player experience of guilt had any effect on the sacredness of the care/harm and fairness/cheating foundations; H4 was not supported. Given the floor effect observed on the guilt variable, however, this should not be viewed as strong evidence against the relation between guilt experiences and short-term changes in moral foundation salience.

Table 12.
Correlations (Across and Within Conditions) between Explicit Guilt, Implicit Guilt, and the Sacredness of the Care/Harm and Fairness/Cheating Foundations

	Explicit Guilt (Dichotomized)	Explicit Guilt (Continuous)	Implicit Guilt
Across Conditions			
Care/Harm Sacredness	.06	.05	.01
Fairness/Cheating Sacredness	-.04	.00	-.01
Unjustified Violence + Low ID			
Care/Harm Sacredness	.12	.05	.04
Fairness/Cheating Sacredness	-.09	-.16	.08
Unjustified Violence + High ID			
Care/Harm Sacredness	.02	.06	.02
Fairness/Cheating Sacredness	-.19†	.07	-.14
Justified Violence + Low ID			
Care/Harm Sacredness	.12	.03	-.01
Fairness/Cheating Sacredness	.09	.10	.04
Justified Violence + High ID			
Care/Harm Sacredness	-.00	.04	-.01
Fairness/Cheating Sacredness	.07	.12	.01

Note. *N*s are as follows: Across Conditions = 378, Unjustified Violence + Low ID = 86, Unjustified Violence + High ID = 98, Justified Violence + Low ID = 95, Justified Violence + High ID = 99. Explicit Guilt (Dichotomized) coded as 0 = felt no guilt, 1 = felt some guilt. ID = Identification. For all correlations, $p > .05$.
† $p = .056$

Although measures of guilt were not reliably related to the sacredness of the care/harm and fairness/cheating foundations, it is still possible that the experimental manipulations influenced the sacredness of these moral foundations. To explore this possibility, two separate 2 (unjustified violence/justified violence) x 2 (low identification/high identification) ANCOVAs were run. In the first ANCOVA,[16] care/harm sacredness served as the dependent variable and sex and Skyrim familiarity were included as covariates because both variables correlated significantly with care/harm sacredness (for sex, $r = .28$, $p < .001$; for Skyrim familiarity, $r = -.12$, $p = .024$). In this model, there were no significant main effects or interactions, Fs < .36, ps > .548. Skyrim familiarity was not a

[16] This model was run with and without three extreme outliers (standardized residuals < -3.00) and the results did not differ in the two analyses. Because of this, the results including all participants are reported.

significant covariate, $F(1, 372) = .06$, $p = .809$, partial $\eta^2 < .001$, but sex was a significant covariate, $F(1, 372) = 24.77$, $p < .001$, partial $\eta^2 = .062$. Thus, there was no evidence that moral foundation sacredness was affected by experimental manipulations of moral disengagement (unjustified violence/justified violence) or avatar identification (low identification/high identification).

A second 2 x 2 ANCOVA was run with fairness/cheating sacredness as the dependent variable. In this model, only participant sex was included as a covariate because it correlated significantly with fairness/cheating sacredness ($r = .14$, $p = .007$), whereas Skyrim familiarity did not ($r = .05$, $p = .338$). The results revealed that the overall ANCOVA model was not significant, $F(4, 373) = 1.92$, $p = .102$, partial $\eta^2 = .020$. Because of this, the results were not interpreted further. Thus, there was also no evidence that the experimental manipulations had any effect on the sacredness of the fairness/cheating foundation.

CHAPTER 8. DISCUSSION

Explicit Guilt

It was predicted that players who engaged in unjustified violence would feel guiltier than those who engaged in justified violence (a main effect; H1) and that moral disengagement (unjustified violence/justified violence) and avatar identification (low/high) would interact so that guilt would be highest for players who engaged in unjustified violence and were highly identified with their avatar (H2). For explicit guilt, neither of these hypotheses was supported by the results of the 2 (unjustified violence/justified violence) x 2 (low identification/high identification) analysis controlling for sex, Skyrim familiarity, and the extent to which participants thought "this is just a game" while playing. However, when the avatar identification factor was replaced with a continuous measurement of similarity identification (which was successfully manipulated by the avatar identification manipulation), then a significant moral disengagement by similarity identification interaction emerged. As predicted, participants who carried out unjustified virtual violence were more likely to feel guilt when they felt similar to their avatar. Similarity identification had no effect, however, on likelihood of feeling guilt for participants who carried out justified virtual violence. Thus, there is evidence that avatar identification (specifically similarity identification) can magnify the emotional impact of behaving immorally in video games. Similarity identification seems to have little effect, however, if participants are behaving morally. This makes sense because participants who behave morally have little reason to feel guilt, meaning that avatar identification has no emotional response to magnify. These findings complement prior research that has found that avatar identification can strengthen the effects of video game experiences (e.g., Fischer et al., 2009, 2010; Konijn et al., 2007).

Moreover, these results extend the potential moderating effects of avatar identification into the moral domain.

There was also strong evidence for Skyrim familiarity operating as a game-level mechanism of moral disengagement: as familiarity with the game increased, the likelihood of feeling guilt decreased. This effect occurred regardless of whether the violence was justified or unjustified. This result is consistent with the findings of Hartmann and Vorderer (2010) and Gollwitzer and Melzer (2012), providing further support for the notion that gamers habituate to immoral in-game behaviors, reducing moral relevance of those behaviors. Additionally, there was support for the "just a game" variable as a game-level mechanism of moral disengagement (as suggested by Klimmt et al., 2006), although this effect was in the opposite direction of what was expected and has been observed in previous research (Hartmann & Vorderer, 2010). Specifically, for participants carrying out unjustified violence, the more they thought "this is just a game" to themselves while playing, the more likely they were to have felt guilt. The reversed direction of this effect may be evidence for active emotional regulation during gameplay. Specifically, participants who started to feel guilty about their in-game behaviors may have attempted to regulate their negative emotions by reminding themselves "this is just a game and I shouldn't feel bad about what I'm doing." However, because the measures of explicit guilt and the extent to which participants thought "this is just a game" while playing both referred to experiences during gameplay it is impossible to draw clear conclusions about the order in which the effects occurred with these data alone.

It was also predicted that the experimental manipulations would only affect guilt if players endorsed the care/harm and fairness/cheating foundations (H3). This hypothesis was

not supported. Measures of care/harm and fairness/cheating foundation salience obtained outside of the lab did not have significant effects (either alone or in interaction with experimental manipulations) on the likelihood of feeling guilt. Thus, there was no evidence that the extent to which participants believed it was important not to harm or cheat others had any effect on their experiences of guilt during gameplay. Although this finding goes against the predictions of MFT (Graham et al., 2012), it should not be taken as compelling evidence against the importance of moral foundations in the study of video games and morality for at least two reasons. First, tests of this hypothesis were limited to a subsample of 96 participants due to unanticipated recruitment difficulties. This severely reduced the sample size and consequently reduced the statistical power to detect an effect. Second, the low reliabilities of the care/harm and fairness/cheating subscales further reduced the statistical power. Thus, further research will be necessary to determine whether the salience of moral foundations influences the likelihood of feeling guilty about immoral in-game behavior.

Implicit Guilt

It was predicted that the effects of the experimental manipulations on explicit guilt would be the same for implicit guilt. Specifically, I predicted that participants who engaged in unjustified violence would exhibit higher levels of implicit guilt than those who engaged in justified violence (a main effect; H1) and that moral disengagement and avatar identification would interact so that implicit guilt would be highest for highly identified players carrying out unjustified violence. Neither of these predictions was supported by the data. There was no significant main effect of moral disengagement nor a significant moral disengagement by avatar identification interaction. Participants in all conditions selected equivalent numbers of hygiene products as most desirable to them at that moment. Thus,

there was no evidence for moral cleansing or the "Macbeth effect" found by Gollwitzer and Melzer (2012). This could be because the experimental manipulations were not strong enough to produce the effect (recall that a floor effect was observed for the explicit guilt variable). The null result may also be attributable to procedural differences in the product desirability paradigm. Specifically, Gollwitzer and Melzer (2012) provided participants with real products to select and take home with them whereas participants in the current study were simply shown pictures of five hygiene and five non-hygiene products and asked to select the five products that were most desirable to them at that moment. It is possible that the effect would have manifested if participants were provided with actual hygiene products that could be taken with them. Although replicating the effect in an online survey format would have served as a compelling conceptual replication, failing to replicate the effect in the present study makes it unclear why the effect was not observed. It is worth noting, however, that Zhong and Liljenquist (2006) have observed the Macbeth effect using a survey format, but participants were asked to rate the desirability of the presented products instead of selecting which products were most desirable. Thus, future research attempting to use a product desirability paradigm in a survey format would likely benefit from asking participants to rate the desirability of each product instead of forcing them to choose a certain number. This is likely to serve as a more sensitive measure.

As with explicit guilt, it was also predicted that endorsement of the care/harm and fairness/cheating foundations would significantly influence the effect of experimental manipulations on implicit guilt (H3). The data did not support this hypothesis. Neither care/harm nor fairness/cheating foundation salience had a significant effect on implicit guilt (either alone or in interaction with experimental manipulations). Although this is discrepant

with the predictions of MFT, as discussed in the explicit guilt section, this null result should not be interpreted as compelling evidence against the importance of moral foundations in the study of video games and morality. The unfortunately small sample size (N = 96) available to test this hypothesis and the low reliabilities of the care/harm and fairness/cheating subscales of the MFQ reduced the statistical power of the relevant analyses. Thus, it remains unclear whether moral foundations exert an important influence on implicit guilt after game play.

Moral Foundation Sacredness

It was predicted that player experience of guilt would lead to short-term increases in the salience of violated moral foundations (i.e., the care/harm and fairness/cheating foundations; H4). The data did not support this hypothesis. Neither explicit nor implicit guilt were significantly related to the sacredness of the care/harm or fairness/cheating foundations. This was true both across conditions and within each of the experimental conditions. Thus, there was no evidence for the moral sensitization effect observed by Grizzard et al. (2014). Feeling guilty about in-game behavior did not increase the sacredness (or salience) or the violated moral foundations. However, given the floor effect for explicit guilt and the fact that experimental manipulations had no significant effect on implicit guilt, these results should not be treated as strong evidence against the moral sensitization effect. Because most participants experienced low levels of guilt, it seems unlikely that they would have felt guilty enough to become sensitized to violated moral foundations. Thus, additional research is needed to assess the potential for video games to morally sensitize guilty players.

Limitations

The present research suffered from two primary limitations. First, the moral disengagement manipulation (unjustified/justified violence) was not strong enough to

produce large differences in explicit guilt. All participants experienced fairly low levels of explicit guilt and this floor effect made it necessary to dichotomize the explicit guilt variable. This dichotomization made the dependent variable less sensitive to variations in explicit guilt, making it more difficult to detect the predicted effects. Despite this limitation, however, a significant moral disengagement by similarity identification interaction was still found using the dichotomized guilt variable. It seems likely that the effect of this interaction would have been even stronger if a continuous measure of explicit guilt could have been used. Properly utilizing a continuous measure of explicit guilt might also reveal other effects that were missed here due to an insensitive dependent variable. Thus, additional research would benefit from stronger manipulations of game-induced guilt.

The current manipulations of moral disengagement may have been weaker than intended for several reasons. First, in the unjustified violence condition the human opponents, although described as “innocent townspeople,” were armed and armored giving them a combative and bandit-like appearance. This combative appearance coupled with the fact that the humans attacked players on sight may have been sufficient to justify fighting and killing the attackers, thus reducing guilt. Additionally, the bandit-like appearance likely made it easier for experienced Skyrim players to morally disengage, because these players likely had prior experience killing bandits who are portrayed as evil in the game. Second, in the justified violence condition, although participants fought against “unholy, undead creatures,” these opponents had a human-like appearance. This may have been sufficient to humanize the opponents, leading to higher levels of guilt than intended and further washing out differences between conditions. Finally, in both conditions players were given the goal of exploring the cave in search of treasure. In retrospect, this goal in itself may have been

sufficient to justify the in-game behaviors for some participants. For others, the goal of killing any creatures (even unholy, undead ones) for material gain may have felt unjustified. Follow-up studies would benefit from avoiding these potential pitfalls.

The second limitation of the current research was the small amount of participants (roughly 25% of the sample) who completed measures of moral foundation salience outside of the lab. This was due to an unanticipated recruitment difficulty and severely reduced the power to detect any effects of baseline moral foundations on guilt experiences. Although losing statistical power to test one of the four hypotheses is regrettable, it was preferable to the alternative—being unable to recruit enough participants to test *any* hypotheses. Future research would benefit from a different strategy for obtaining a baseline measure of moral foundation salience (as compared to planning on matching up measures from mass testing or scale validation sessions). This could be done, for example, by obtaining a measure in the lab before experimental manipulations but embedding the measure within other questionnaires to reduce suspiciousness and demand characteristics.

Future Directions

The scientific study of video games and morality is still in its infancy, meaning there are many unanswered questions. For example, do video games have the power to alter our sense of morality? There is some evidence that violating moral foundations in video games can increase the salience of those foundations in the short-term if players feel guilty about what they have done (Grizzard et al., 2014), but it is unclear what the long-term consequences may be. The fact that game-induced guilt is less likely when familiarity with the game is high suggests that gamers become desensitized to in-game immoral behavior. But does that desensitization carry over into the real-world? Do repeated in-game violations of

moral foundations make those foundations less important to us over time? Or do players become sensitized to moral foundations that are violated in video games, making them more important? To make matters more complicated, the effects may depend on the context in which the violations occur. For example, if players are punished for violating the care/harm foundation, that foundation may become more salient over time. However, if players are instead rewarded for violating the care/harm foundation (as they often are), that foundation may become less salient over time.

Moral disengagement likely interacts with these potential effects in complicated ways. For example, even if a person believes it is important not to harm others this belief might not matter if that person is morally disengaged (e.g., "it's important not to harm others… unless they are evil"). In addition to potentially altering moral foundations, video games might also influence people's tendency to morally disengage. For example, if video game players become comfortable with justifying and carrying out immoral behavior in video games does that increase their likelihood of justifying and carrying out immoral behavior in the real-world? There is compelling evidence that behaving aggressively in video games does in fact "bleed over" into real-world aggression (Anderson et al., 2010). If these effects occur with the morally-relevant behavior of aggression, it seems reasonable to suspect that they may occur with other morally-relevant behaviors. However, despite the general tendency for research to focus on the negative effects of video games (a phenomena that is not limited to this domain of research), it is important to acknowledge the great potential for positive effects. For example, if players routinely behave morally in video games does this increase their likelihood of behaving morally in the real-world? As with aggressive behavior, there is convincing evidence that in-game prosocial behavior does "bleed over" into real-

world prosocial behavior (Greitemeyer & Mügge, 2014). Thus, it seems reasonable to expect both positive and negative effects of video games on morality depending on the content.

Finally, as technology advances it is becoming easier for gamers to identify with their in-game avatars in important ways. For example, many games allow for extensive avatar customization, allowing people to play as avatars similar to them or avatars that embody the type of person they would like to be. Others offer immersive virtual reality experiences where players feel as if they are physically present in the game world. Because avatar identification has the potential to moderate content effects, it is likely to be important for understanding the relations between video game play and morality. For example, if a person plays as an immoral character that they identify with, this may increase their likelihood of immoral behavior (because they wish to be more like that character). In contrast, if a person plays as an immoral character that they do not identify with, this may decrease their likelihood of immoral behavior (because they wish to distance themselves from that character).

Conclusion

The present study integrated video game research concerning moral foundations theory, moral disengagement theory, and avatar identification. Results revealed that feeling similar to one's in-game avatar increases the likelihood of feeling guilty about carrying out unjustified violence in a video game. In contrast, feeling similar to one's in-game avatar had no effect on the likelihood of feeling guilty about carrying out justified virtual violence. These findings suggest that the moral impact of video games can be increased through avatar identification. There was also strong evidence that familiarity with the given video game decreased the likelihood of experiencing guilt regardless of whether the violence that was

carried out was justified or unjustified. This suggests that players habituate to immoral in-game behaviors as they gain experience with the game.

There was no evidence for any effect of moral disengagement (unjustified violence/justified violence) or avatar identification (low/high) on implicit guilt, although this may be attributable to measurement sensitivity. There was also no evidence that endorsement of the moral foundations of care/harm or fairness/cheating had any effect on player experiences of guilt (although the sample size available to test this hypothesis was much smaller than intended). Finally, there was no evidence that player experience of guilt increased the salience of moral foundations that were violated in-game, although this null effect may be attributable to a floor effect observed on the explicit guilt variable. Future research is necessary to provide additional tests of these hypotheses.

REFERENCES

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*(4), 772–790. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1037/0022-3514.78.4.772

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., … Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin, 136*(2), 151–173. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1037/a0018251

Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review, 3*(3), 193–209. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1207/s15327957pspr0303_3

Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education, 31*(2), 101–119. http://doi.org/10.1080/0305724022014322

Bluemke, M., Friedrich, M., & Zumbach, J. (2010). The influence of violent and nonviolent computer games on implicit measures of aggressiveness. *Aggressive Behavior, 36*(1), 1–13. http://doi.org/10.1002/ab.20329

Bowman, N. D., Schultheiss, D., & Schumann, C. (2012). "I'm attached, and I'm a good guy/gal!": How character attachment influences pro- and anti-social motivations to play massively multiplayer online role-playing games. *Cyberpsychology, Behavior,*

and Social Networking, *15*(3), 169–174. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1089/cyber.2011.0311

Dogruel, L., Joeckel, S., & Bowman, N. D. (2013). Elderly people and morality in virtual worlds: A cross-cultural analysis of elderly people's morality in interactive media. *New Media & Society*, *15*(2), 276–293. http://doi.org/10.1177/1461444812451571

Fischer, P., Greitemeyer, T., Morton, T., Kastenmüller, A., Postmes, T., Frey, D., … Odenwälder, J. (2009). The racing-game effect: Why do video racing games increase risk-taking inclinations? *Personality and Social Psychology Bulletin*, *35*(10), 1395–1409. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1177/0146167209339628

Fischer, P., Kastenmüller, A., & Greitemeyer, T. (2010). Media violence and the self: The impact of personalized gaming characters in aggressive video games on aggressive behavior. *Journal of Experimental Social Psychology*, *46*(1), 192–195. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1016/j.jesp.2009.06.010

Gabbiadini, A., Andrighetto, L., & Volpato, C. (2012). Brief report: Does exposure to violent video games increase moral disengagement among adolescents? *Journal of Adolescence*, *35*(5), 1403–1406. http://doi.org/10.1016/j.adolescence.2012.06.001

Gabbiadini, A., Riva, P., Andrighetto, L., Volpato, C., & Bushman, B. J. (2014). Interactive effect of moral disengagement and violent video games on self-control, cheating, and aggression. *Social Psychological and Personality Science*, *5*(4), 451–458. http://doi.org/10.1177/1948550613509286

Gollwitzer, M., & Melzer, A. (2012). Macbeth and the joystick: Evidence for moral cleansing after playing a violent video game. *Journal of Experimental Social Psychology, 48*(6), 1356–1360. http://doi.org/10.1016/j.jesp.2012.07.001

Graham, J., & Haidt, J. (2012). Sacred values and evil adversaries: A moral foundations approach. In M. Mikulincer & P. R. Shaver (Eds.), *The social psychology of morality: Exploring the causes of good and evil.* (pp. 11–31). Washington, DC: American Psychological Association. Retrieved from http://dx.doi.org/10.1037/13091-001

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2012). *Moral Foundations Theory: The Pragmatic Validity of Moral Pluralism* (SSRN Scholarly Paper No. ID 2184440). Rochester, NY: Social Science Research Network. Retrieved from http://papers.ssrn.com/abstract=2184440

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, *101*(2), 366–385. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1037/a0021847

Greitemeyer, T., & Mügge, D. O. (2014). Video games do affect social outcomes: A meta-analytic review of the effects of violent and prosocial video game play. *Personality and Social Psychology Bulletin*, *40*(5), 578–589. http://doi.org/10.1177/0146167213520459

Grizzard, M., Tamborini, R., Lewis, R. J., Wang, L., & Prabhu, S. (2014). Being bad in a video game can make us morally sensitive. *Cyberpsychology, Behavior, and Social Networking*, *17*(8), 499–504. http://doi.org/10.1089/cyber.2013.0658

Hartmann, T., Toz, E., & Brandon, M. (2010). Just a game? Unjustified virtual violence produces guilt in empathetic players. *Media Psychology*, *13*(4), 339–363. http://doi.org/10.1080/15213269.2010.524912

Hartmann, T., & Vorderer, P. (2010). It's okay to shoot a character: Moral disengagement in violent video games. *Journal of Communication*, *60*(1), 94–119. http://doi.org/10.1111/j.1460-2466.2009.01459.x

Joeckel, S., Bowman, N. D., & Dogruel, L. (2012). Gut or game? The influence of moral intuitions on decisions in video games. *Media Psychology*, *15*(4), 460–485. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1080/15213269.2012.727218

Joeckel, S., Bowman, N. D., & Dogruel, L. (2013). The influence of adolescents' moral salience on actions and entertainment experience in interactive media. *Journal of Children and Media*, *7*(4), 480–506. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1080/17482798.2013.781513

Klimmt, C., Dorothée, H., & Peter, V. (2009). The video game experience as "true" identification: A theory of enjoyable alterations of players' self-perception. *Communication Theory*, *19*(4), 351–373. http://doi.org/10.1111/j.1468-2885.2009.01347.x

Klimmt, C., Hefner, D., Vorderer, P., Roth, C., & Blake, C. (2010). Identification with video game characters as automatic shift of self-perceptions. *Media Psychology*, *13*(4), 323–338. http://doi.org/10.1080/15213269.2010.524911

Klimmt, C., Schmid, H., Nosper, A., Hartmann, T., & Vorderer, P. (2006). How players manage moral concerns to make video game violence enjoyable. *Communications*, *31*(3). http://doi.org/10.1515/COMMUN.2006.020

Konijn, E. A., Bijvank, M. N., & Bushman, B. J. (2007). I wish I were a warrior: The role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental Psychology, 43*(4), 1038–1044. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1037/0012-1649.43.4.1038

Lewis, M. L., Weber, R., & Bowman, N. D. (2008). "They may be pixels, but they're my pixels:" Developing a metric of character attachment in role-playing video games. *CyberPsychology & Behavior, 11*(4), 515–518. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1089/cpb.2007.0137

Lin, S.-F. (2011). Effect of opponent type on moral emotions and responses to video game play. *Cyberpsychology, Behavior, and Social Networking*, *14*(11), 695–698. http://doi.org/10.1089/cyber.2010.0523

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*(4), 344–360. http://doi.org/10.1007/s11031-006-9051-8

Shafer, D. M. (2012). Moral choice in video games: An exploratory study. *Media Psychology Review*, *5*(1). Retrieved from http://mprcenter.org/review/shafermoralchoicegames/

Tamborini, R. (2011). Moral intuition and media entertainment. *Journal of Media Psychology: Theories, Methods, and Applications*, *23*(1), 39–45. http://doi.org/10.1027/1864-1105/a000031

Tamborini, R., Eden, A., Bowman, N. D., Grizzard, M., Weber, R., & Lewis, R. J. (2013). Predicting media appeal from instinctive moral values. *Mass Communication & Society*, *16*(3), 325–346. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1080/15205436.2012.703285

Uhlmann, E., & Swanson, J. (2004). Exposure to violent video games increases automatic aggressiveness. *Journal of Adolescence*, *27*(1), 41–52. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1016/j.adolescence.2003.10.004

Van Looy, J., Courtois, C., De Vocht, M., & De Marez, L. (2012). Player identification in online games: Validation of a scale for measuring identification in MMOGs. *Media Psychology*, *15*(2), 197–221. http://doi.org/http://dx.doi.org.proxy.lib.iastate.edu/10.1080/15213269.2012.674917

Watson, D., & Clark, L. A. (1999). The PANAS-X: Manual for the positive and negative affect schedule-expanded form. Retrieved from http://ir.uiowa.edu/cgi/viewcontent.cgi?article=1011&context=psychology_pubs

Weaver, A. J., & Lewis, N. (2012). Mirrored morality: An exploration of moral choice in video games. *Cyberpsychology, Behavior, and Social Networking*, *15*(11), 610–614. http://doi.org/10.1089/cyber.2012.0235

Zhong, C.-B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, *313*(5792), 1451–1452. http://doi.org/10.1126/science.1130726

APPENDIX A. IRB APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 8/26/2015

To: Johnie Allen
W112 Lagomarcino

CC: Dr. Craig A Anderson
W112 Lagomarcino Hall
Dr. Christopher Groves
W112 Lagomarcino

From: Office for Responsible Research

Title: Video Games and Product Desirability

IRB ID: 15-384

Approval Date:	8/25/2015	**Date for Continuing Review:**	8/23/2017
Submission Type:	New	**Review Type:**	Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, **including the recruitment materials and informed consent documents that have the IRB approval stamp.**
- **Retain signed informed consent documents for 3 years after the close of the study,** when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of** (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.
- **Stop all research activity if IRB approval lapses,** unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX B. INFORMED CONSENT DOCUMENT

Title of the Study: Video Games and Product Desirability

Investigators: Johnie J. Allen, B.A. & Craig A. Anderson, Ph.D.

Eligibility Requirements: You must be at least 18 years of age to participate.

Introduction
This study examines the relationship between video game characteristics and product desirability. We believe that certain types of consumers prefer certain types of games and other products. We are interested in better understanding which types of games and products people prefer. You are being invited to participate in this study because you are a student in Com. Studies 101, Psychology 101, 230, or 280.

Procedure
Participation in this study is voluntary. If you agree to be in this study, it will take up to 60 minutes. You will receive two SONA credits for participating. To complete this study, we will ask you to do the following things: You will be asked to play one or more of several possible video games. An electronic recording will be made of your gameplay. Next, you will be asked to complete a series of questionnaires. You may skip any questions which you are not comfortable answering.

Risks
You will be asked to play one or more video games, and complete a few questionnaires. It is possible that some of the content of the games may be discomforting for some. Additionally, some of the questions may be sensitive in nature. If you feel uncomfortable with the questionnaires or any other tasks, you can stop immediately with no penalty and you will receive credit for your time. Also, you may skip any questions or tasks if you do not feel comfortable.

Benefits
You will receive first-hand knowledge of how psychological research is conducted, which will complement information from your psychology class. It is hoped that the information gained in this study will benefit society by improving the understanding of the relationship between video game characteristics and product desirability.

Costs and Compensation
There will not be any costs to you for participating in this study, except for your time spent in the laboratory. This study will take up to 60 minutes of your time, for which you will electronically receive two SONA credits even if you choose to discontinue participation in the study. Please keep in mind that alternative ways to receive course credit are available within each of these classes (Com. Studies 101, Psychology 101, 230, or 280).

Participant Rights
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. You will also receive a copy of this consent form.

Confidentiality

Records identifying participants will be kept confidential and will not be made publicly available. Federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information. Only the research team will have access to the data which will be stored in a locked office. The only function of the collected data is to assist in the proposed research. The only identifier will be your University ID number which will be removed prior to data analysis. The data obtained from this research will be secured on data disks and kept in a locked room only accessible by this research team. If the results are published, your identity will remain confidential.

Questions or Problems

You are encouraged to ask questions at any time during this study. For further information about the study contact Johnie J. Allen at (###) ###-#### or jallen@iastate.edu, or Dr. Craig A. Anderson at (###) ###-#### or caa@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, Office for Responsible Research, (515) 294-3115, 1138 Pearson Hall, Ames, IA 50011.

****

You may or may not choose to participate in this study. If you choose to participate, please read the following statement and acknowledge your voluntary consent by signing and printing your name.

I hereby consent to my participation in this experiment. I have been informed and understand the purposes and procedures of this study that can be divulged to me in advance. I understand that my participation is completely voluntary and that I am free to withdraw consent and discontinue participation at any time without losing credit. I agree to participate in this experiment as described above.

Signature of Participant Print Name Date

****

FOR EXPERIMENTER TO COMPLETE:

I certify that the participant has been given adequate time to read and learn about the study and all his/her questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

Signature of Investigator or Person Obtaining Consent **Date**

APPENDIX C.

DESCRIPTIVE STATISTICS FOR ALL VARIABLES OF INTEREST

Table 13.
Descriptive Statistics for All Variables of Interest

Variable	*M*	*SD*	Min	Max
Moral Foundations Salience				
Care/Harm Salience	3.50	.70	2.00	4.83
Fairness/Cheating Salience	3.46	.58	1.83	4.83
Authority/Subversion Salience	2.97	.65	1.33	4.33
Loyalty/Betrayal Salience	3.00	.72	1.17	4.67
Sanctity/Degradation Salience	2.63	.92	.17	4.67
Emotion Scales				
Joviality	2.83	1.02	1.00	5.00
Self-Assurance	3.18	.90	1.00	5.00
Attentiveness	3.92	.78	1.00	5.00
Hostility	1.72	.65	1.00	3.67
Sadness	1.49	.61	1.00	3.80
Explicit Guilt (Continuous)	1.25	.43	1.00	4.00
Implicit Guilt	1.91	1.04	.00	5.00
Video Game Ratings				
Positive VG Experience	4.89	1.69	1.00	7.00
Negative VG Experience	2.96	1.65	1.00	7.00
VG Violence	4.45	1.25	1.00	7.00
Action Pace	3.64	1.41	1.00	7.00
Competitiveness	2.74	1.51	1.00	7.00
In-Game Need Satisfaction				
Competence	4.39	1.61	1.00	7.00
Autonomy	4.70	1.43	1.00	7.00
Presence/Immersion	3.47	1.20	1.00	6.78
Intuitive Controls	4.82	1.41	1.00	7.00
Composite Need Satisfaction	4.06	1.07	1.22	6.56
Controls & Manipulation Checks				
Skyrim Familiarity	3.57	2.57	1.00	7.00
Thought “Just a Game”	4.12	2.04	1.00	7.00
Thought “Just an Experiment”	2.92	1.71	1.00	7.00
Fought Nonhuman Creatures	4.67	2.31	1.00	7.00
Felt Justified	5.38	1.68	1.00	7.00
Could Identify	3.69	1.94	1.00	7.00
Avatar Identification Measures				
Similarity Identification	1.91	.86	1.00	4.83
Wishful Identification	1.85	.85	1.00	4.60
Embodied Presence	2.33	1.00	1.00	5.00
Composite Avatar Identification	2.04	.80	1.00	4.24

Table 13 continued

Variable	*M*	*SD*	Min	Max
Moral Foundations Sacredness				
Care/Harm Sacredness	6.95	1.23	1.00	8.00
Fairness/Cheating Sacredness	5.39	1.44	1.50	8.00
Authority/Subversion Sacredness	4.53	1.73	1.00	8.00
Loyalty/Betrayal Sacredness	6.25	1.34	1.50	8.00
Sanctity/Degradation Sacredness	6.11	1.32	1.75	8.00
Video Game Experience				
Weekly Playtime of VGs	1.67	1.00	1.00	5.00
Years Playing VGs	9.76	4.78	0.00	20.00
VG Experience (Composite)	1.00	5.00	1.00	5.00
Video Game Genre Preferences				
Shooter	3.09	1.43	1.00	5.00
Action/Adventure	2.52	1.36	1.00	5.00
Puzzle	2.07	1.17	1.00	5.00
Strategy	2.18	1.31	1.00	5.00
Simulation	2.15	1.26	1.00	5.00
Music & Party	2.13	1.21	1.00	5.00
Solo Role-Playing	2.47	1.47	1.00	5.00
Sports	2.66	1.56	1.00	5.00
MMORPGs	2.05	1.40	1.00	5.00
Real-World MMOGs	1.30	.63	1.00	5.00
Fighting	2.01	1.24	1.00	5.00

Note. Min = Minimum, Max = Maximum, VG = Video Game, MMORPGs = Massively Multiplayer Online Role-Playing Games, MMOGs = Massively Multiplayer Online Games.

APPENDIX D.

CORRELATION MATRIX FOR PRIMARY ANALYSIS VARIABLES

Table 14.
Correlation Matrix for Primary Analysis Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Sex	--																		
2. Skyrim Familiarity	-.47	--																	
3. Thought "Just a Game"	-.01	-.13	--																
4. Explicit Guilt (Continuous)	.20	-.34	.13	--															
5. Explicit Guilt (Dichotomous)	.12	-.36	.10	.69	--														
6. Implicit Guilt	-.19	-.01	.05	-.01	.04	--													
7. Positive VG Experience	-.33	.63	-.24	-.36	-.25	-.05	--												
8. Negative VG Experience	.45	-.54	.06	-.37	.32	.01	-.44	--											
9. VG Violence	-.02	.05	-.00	.11	.07	-.01	.06	.18	--										
10. Action Pace	-.12	.27	-.19	-.06	-.04	-.04	.46	.02	.22	--									
11. Competitiveness	.06	-.10	.05	.12	.14	.07	.08	.29	.17	.31	--								
12. Similarity Identification	-.05	.20	-.06	-.02	-.06	-.04	.26	-.18	-.05	.13	.09	--							
13. Wishful Identification	-.10	.24	-.04	-.05	-.00	.03	.29	-.15	.03	.17	.08	.74	--						
14. Embodied Presence	-.18	.31	-.20	-.10	-.05	.04	.42	-.22	-.02	.26	.11	.62	.65	--					
15. Avatar Identification (Composite)	-.13	.29	-.12	-.07	-.04	.01	.37	-.21	-.02	.22	.11	.88	.88	.88	--				
16. Care/Harm Sacredness (MFSS)	.28	-.12	-.02	.05	.06	.01	-.10	.13	.03	-.02	-.06	-.04	-.11	-.06	-.08	--			
17. Fairness/Cheating Sacredness (MFSS)	.14	.05	-.01	-.02	-.04	-.01	.01	-.04	-.03	.00	-.11	.01	-.06	.03	-.00	.55	--		
18. Care/Harm Salience (MFQ)	.28	-.01	-.07	.01	-.05	-.01	-.01	.04	.09	.13	.13	.07	.01	.10	.08	.39	.23	--	
19. Fairness/Cheating Salience (MFQ)	.13	-.03	.07	.04	-.08	.08	-.07	-.02	.02	.17	-.02	-.03	-.03	.07	.01	.24	.22	.54	--

Note. $N = 96$ for all correlations calculated for Care/Harm Salience (MFQ) and Fairness/Cheating Salience (MFQ) in the bottom two rows. For these correlations, values greater than |.21| are significant at $p < .01$, and values greater than |.27| are significant at $p < .001$. $N = 378$ for all other correlations. For these correlations, all values greater than |.10| are significant at $p < .05$, all values greater than |.13| are significant at $p < .01$, and all values greater than |.17| are significant at $p < .001$.